

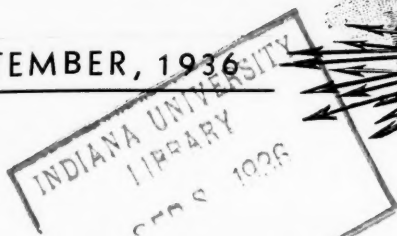
Manufacturers Record

Reg. U. S. Patent Office



SEPTEMBER, 1936

BALTIMORE, MD.



OUTSTANDING FACTS

From the confusion and ballyhoo of the New Deal certain facts stand out.

The administration solemnly pledged lower cost of Government, fewer bureaus and less competition with private business.

Instead, the cost of Government has increased to the point of danger. There has been added a maze of bureaus with uncounted jobholders, while Government competition with private enterprise has not only grown, but threatens to enter new fields to the discouragement of individual investment.

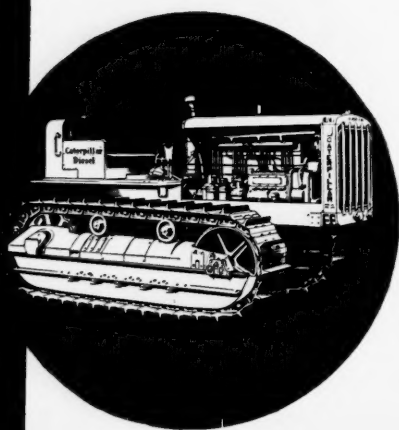
Laws have been passed and others urged for passage without regard to their constitutionality.

All of this regardless of cost, while the tax bill mounts and we have not yet begun to pay.

The objective has been to centralize in Washington a degree of power hitherto unknown in this country and abhorrent to Americans who value adherence to the proper functions and principles of government established by the American Constitution.

WHEN IS IT TIME TO TRADE IN YOUR PRESENT MACHINE?

If you are now using a gasoline tractor or motor grader, right now is the time to replace it with a "Caterpillar" Diesel. Its tremendous savings in fuel costs—its low maintenance costs—its power and endurance—are fast obsoleting other forms of power. Today's jobs demand the "Caterpillar" Diesel. You can't do today's jobs with yesterday's power—not if you want minimum costs.



More than 15,000 "Caterpillar" Diesels—tractors, motor graders and engines—are already in use. The number is fast increasing. Resale values of used gasoline tractors have dropped—seem certain to drop further. Replacement now gives you two important advantages—you begin immediately to enjoy the savings of "Caterpillar" Diesel power—you avoid further obsolescence loss on your present equipment. See your dealer for the SHOW-DOWN on this question. Caterpillar Tractor Co., Peoria, Ill., U. S. A.

CATERPILLAR

THE MOST

Alert Watchman

YOUR MONEY
CAN HIRE . . .



● Fairbanks Printomatic scales guard your profits by automatically making a printed record of every operation. They stand guard over incoming raw materials, factory operations and final shipping weights. On the job 24 hours a day. They never forget . . . never make mistakes . . . never fail to print accurately.

Printomatics may be purchased outright, or leased. They can also be installed on Fairbanks Dial Scales now in service. Address Department L-31, Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill. And 40 principal cities—a service station at each house.

FAIRBANKS



Scales

P R E F E R R E D T H E W O R L D O V E R

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Entered as second-class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879, Volume CV, No. 9 Monthly
SEPTEMBER NINETEEN THIRTY-SIX

STEEL Storage Tanks in INDUSTRY



ELEVATED TANKS provide gravity water pressure for fire protection. They are used in connection with automatic sprinkler systems, hose hydrants or both.

ELEVATED TANKS provide uniform and unflinching water pressure for general service, boiler feed or processing at industrial plants.

FLAT BOTTOM TANKS are used to provide storage for water, oil, gasoline, alcohol, molasses, acids, etc., in large and small quantities.

ELEVATED TANKS are used for roadside water and oil delivery on railroads.

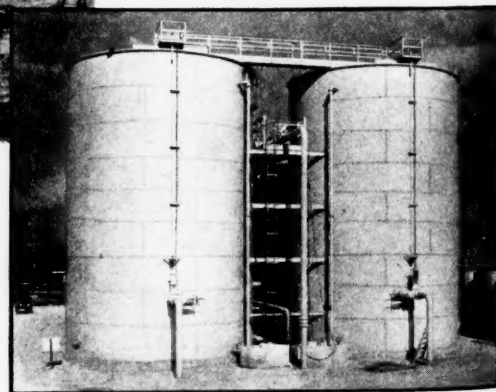
SPECIAL TANKS such as Hortonspheres and Hortonspheroids are used to store volatile liquids. They are designed to withstand internal pressure.

PROCESS TANKS of special shapes and designs are used in many industries to store and handle liquids, gases and, in some cases, solids.

REGARDLESS of current interest in special metals and alloys, steel tanks are probably used more extensively in industry than any other type. Large numbers are utilized in the rapidly expanding Southern process industries.

Rayon, soap making, paper mills and other establishments without end find steel tanks indispensable. Water purification requires settling tanks and filters. Brewing and distilling is done largely with steel tank equipment and cookers.

Steel tanks have long been standard storage containers for many liquids. They are used to store materials for processing chemicals for use in the process and finished products. Water supplies are provided in steel tanks, either elevated or flat bottom, depending upon requirements. Whenever you require storage capacity for any purpose—standard or special designs—write our nearest office for quotations.



Upper View: 200,000 gal. elevated tank 200 ft. to bottom at steam plant near Baton Rouge, La. Lower View: 340,000 gal. storage tanks 34 ft. in diameter by 50 ft. high.

CHICAGO BRIDGE & IRON WORKS

Birmingham1530 North Fifth St.
Dallas1408 Dallas Athletic Club Bldg.
Houston2919 Main Street
Tulsa1611 Thompson Bldg.

New York3313-165 Broadway Bldg.
Cleveland2216 Rockefeller Bldg.
Chicago2106 Old Colony Bldg.
San Francisco1040 Rialto Bldg.

Philadelphia1619-1700 Walnut Street Bldg.
Detroit1510 Lafayette Bldg.
Boston1510 Consolidated Gas Bldg.
HavanaEdificio Abreu 407

Plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

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SEPTEMBER
1936

Volume CV No. 9

MANUFACTURERS RECORD

Devoted to the Upbuilding of the
Nation Through the Development
of the South and Southwest as the
Nation's Greatest Material Asset

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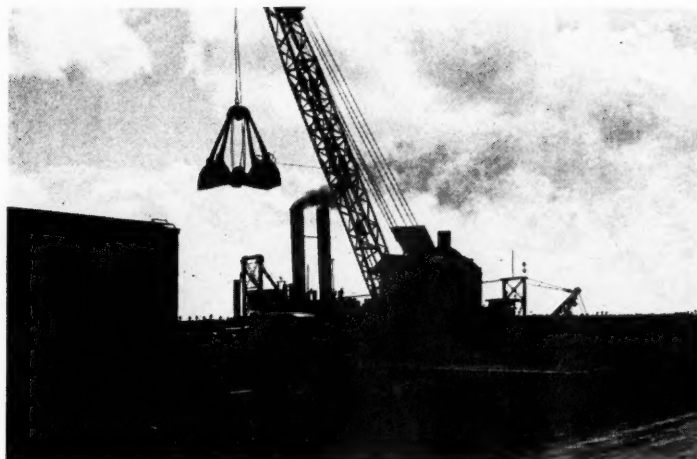
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**PUBLISHERS DAILY CONSTRUCTION BULLETIN AND
BLUE BOOK OF SOUTHERN PROGRESS**

Member
A.B.C.

SEPTEMBER NINETEEN THIRTY-SIX



EDITORIALS

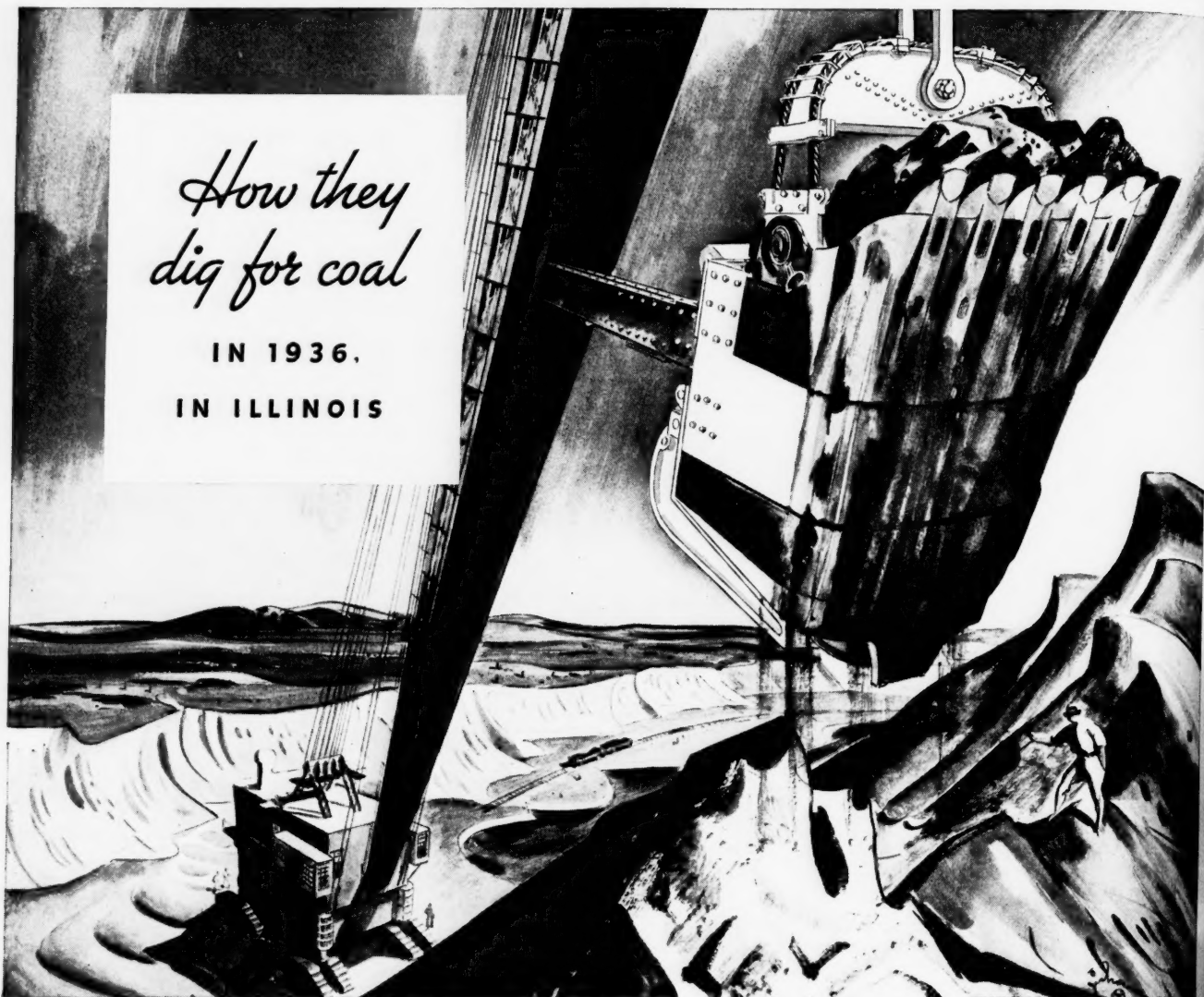
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*How they
dig for coal*

IN 1936.

IN ILLINOIS

● They use an Aluminum dipper!

What a dipper it is! So big that one load would completely fill a room in your house ten feet wide by eleven feet long.

The dipper's work is "stripping the over-burden," that being the name given the 15- to 50-foot thick layer of soil, shale and stone which covers the thin bed of coal lying under vast areas of Illinois prairie.

Once this mammoth dipper uncovers the bed of coal, it is a simple matter to load it into trucks or cars.

Getting to the coal is the expensive thing.

By using a dipper made largely of Alcoa Aluminum alloys the operators are cutting that digging expense approximately 30 per cent.

For this dipper has a capacity of 32 cubic yards; the largest in the world. Yet it is operated by power equipment originally designed for a much smaller dipper made entirely of heavy metals.

Therefore the same power equipment and the same number of men actually move 30 per cent more over-

burden in the same time, because the weight saved by using the light strong alloys of Alcoa Aluminum was put into extra dirt-moving capacity.

For months on end, 24 hours a day, 7 days a week, this dipper has been operating, moving 30 per cent more load every time it swings. It can do these things because nature made Aluminum light, and research has made it strong.

It is this unique combination of qualities that is causing streamline trains and buses and truck bodies to "go" Aluminum.

That is why everything that moves or must be moved operates more economically when made light with Alcoa Aluminum.

Engineers in many industries are finding new places every day where the lightness and strength of Alcoa Aluminum save power, and add convenience and mobility. With this saving, the user also gets superior resistance to corrosion, which assures long life and low maintenance. Aluminum Company of America, 2109 Gulf Building, Pittsburgh, Pennsylvania.



ALCOA · ALUMINUM



MORE MILES OF CLOTH

Per Hour

Flow from the Marvelous New Machines in America's Textile Mills

EVERY MONTH HOSTS of new fabrics pour forth to clothe America. Each one different in vital details; weave, design, material. Each creating new problems for looms, spindles, oils.

Today's greatest problem is faster production with less spoilage. New bearing designs, higher speeds and heavier loads will help tremendously—if the oil is right. Working with machinery builders and users, Socony-Vacuum has developed new oils tested and proved capable of efficient lubrication at speeds more than double those of a few years ago.

Makers of motor cars or cement—aviators or mariners—have learned to look to Socony-Vacuum first. With unmatched products, skilled engineering, the greatest experience in the oil industry, Socony-Vacuum makes Correct Lubrication pay valuable dividends.

That's why plants in all fields—men who guide them, men who work there—deem it wise to follow this rule—"Talk with the Socony-Vacuum Representative When He Calls."

*70 Years' Experience Making
Gargoyle Lubricants
Mean Correct Lubrication*

SOCONY-VACUUM OIL Co.

INCORPORATED

STANDARD OIL OF NEW YORK DIVISION • WHITE STAR DIVISION • LUBRITE DIVISION • WHITE EAGLE DIVISION
WADHAMS OIL COMPANY • MAGNOLIA PETROLEUM COMPANY • GENERAL PETROLEUM CORPORATION OF CALIFORNIA



Hydraulic Turbines

•

Francis and High Speed Runners

• •

Penstocks—Butterfly Valves—
Power Operated Rack Rakes
—Gates and Gate Hoists
—Electrically Welded Racks

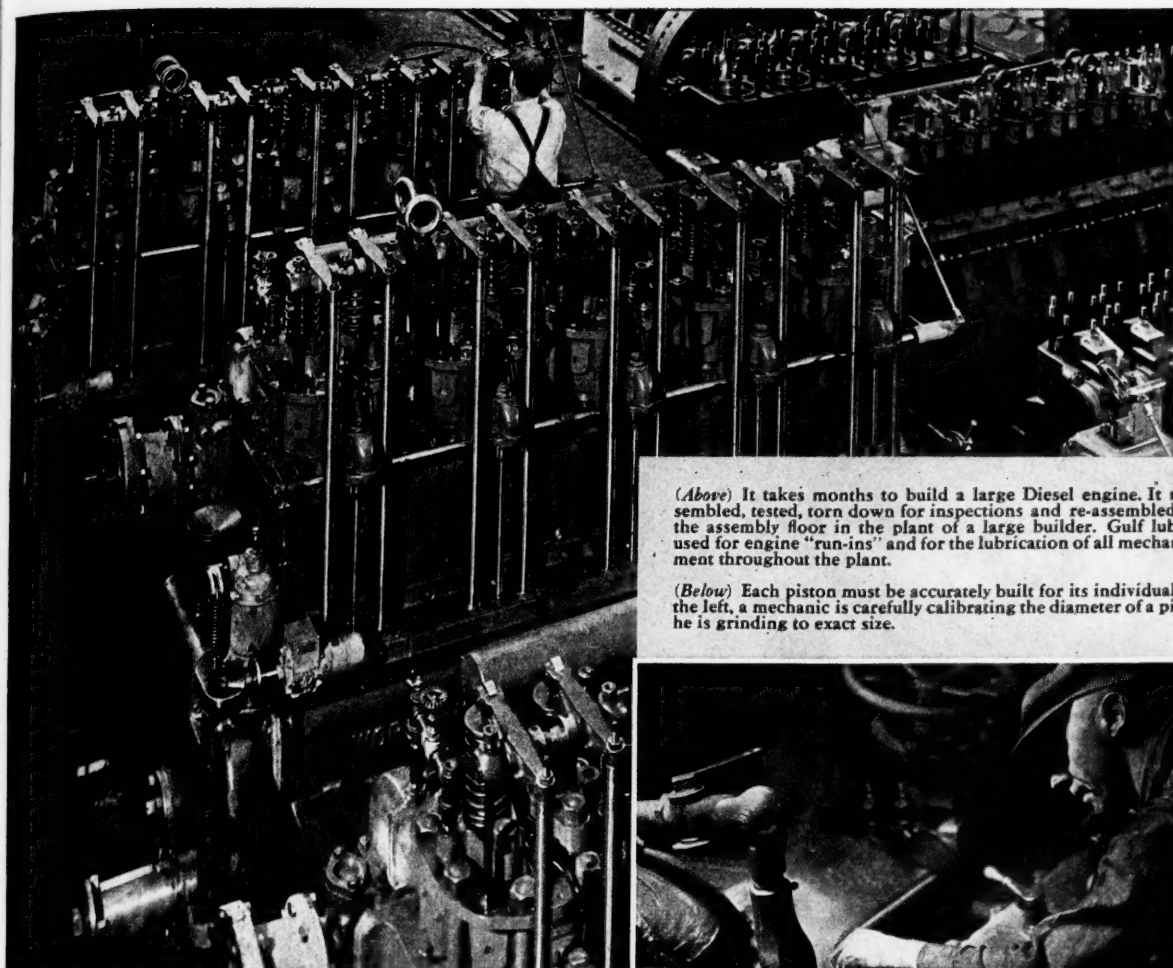
• • •

Newport News Shipbuilding and Dry Dock Co.

(Hydraulic Turbine Division)

90 Broad Street, New York, N. Y.

Newport News, Virginia



(Above) It takes months to build a large Diesel engine. It must be assembled, tested, torn down for inspections and re-assembled. Above is the assembly floor in the plant of a large builder. Gulf lubricants are used for engine "run-ins" and for the lubrication of all mechanical equipment throughout the plant.

(Below) Each piston must be accurately built for its individual engine. At the left, a mechanic is carefully calibrating the diameter of a piston which he is grinding to exact size.



DIESELS ARE BUILT WITH CLOSE TOLERANCES

GULF PARVIS OILS PRESERVE THEM



**Pistons, Wrist Pins, Main Bearings
and Crank Shaft Bearings** *need a lubricant of highest quality to minimize wear*

WHEN the precision methods employed in the modern Diesel builder's plant are observed, the need for lubricants of highest quality to safeguard closely fitted parts is apparent.

That is why leading builders—as well as thousands of operators of Diesel engines—use Gulf Parvis oil. This high quality lubricant has been treated and purified by the finest of the new selective solvent processes. It stands up over long periods of service—costs less to use in the long run.

America's Diesel engine builders—more than 50 strong—have placed their stamp of approval on Gulf Diesel lubricants. Let these quality oils prove their economy and efficiency in your equipment.

Gulf Oil Corporation—Gulf Refining Company

GENERAL OFFICES: GULF BUILDING, PITTSBURGH, PA.

There is a
DU PONT
EXPLOSIVE
made especially
for every job

WHATEVER kind of blasting work you have to do, there are DU PONT explosives available to perform the work efficiently and economically. The types of explosives made and extensively used today are described on this page.

In addition to their variety, DU PONT explosives are obtainable in ample quantity wherever required. Prompt, reliable deliveries are essential to contractors' performances. Du Pont has the production and distribution facilities to provide specific types of explosives when, where and as required.

For efficiency, progress and dependability wherever explosives are necessary, specify and use DU PONT explosives and blasting accessories.

E. I. DU PONT DE NEMOURS & CO., INC.

Explosives Department, Wilmington, Del.

BRANCH OFFICES:

Birmingham, Ala.
 Boston, Mass.
 Chicago, Ill.
 Denver, Colo.
 Duluth, Minn.
 Huntington, W. Va.

Joplin, Mo.
 Juneau, Alaska
 Kansas City, Mo.
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Pottsville, Pa.
 St. Louis, Mo.
 San Francisco, Calif.
 Scranton, Pa.
 Seattle, Wash.
 Spokane, Wash.
 Wilkes-Barre, Pa.



EXPLOSIVES



ROAD BUILDING

Red Cross Extra and Red Cross Blasting FR are standard in dry conditions. They break up rock sufficiently and give good digging. In wet work, du Pont Special Gelatin and du Pont Gelex do the job. For fill settlement, contractors employ du Pont Ditching Dynamite or du Pont Special Gelatin.

TUNNEL DRIVING

In close work, du Pont Gelatin dynamites are especially efficient. Their fumes are far less objectionable than those of other dynamites. They are plastic, load at high densities and are water resistant. Du Pont Gelexes, bulkier than the gelatins, may often be substituted with resulting economy.

FOUNDATIONS

In every type of excavation, from dam footings to small cellars, the proper selection of explosives results in real economy. In dry work, Red Cross Extras and du Pont Extras allow maximum yardage excavated in minimum time. Where water is a factor, contractors use du Pont Special Gelatin or du Pont Gelex.

RAILROAD BUILDING

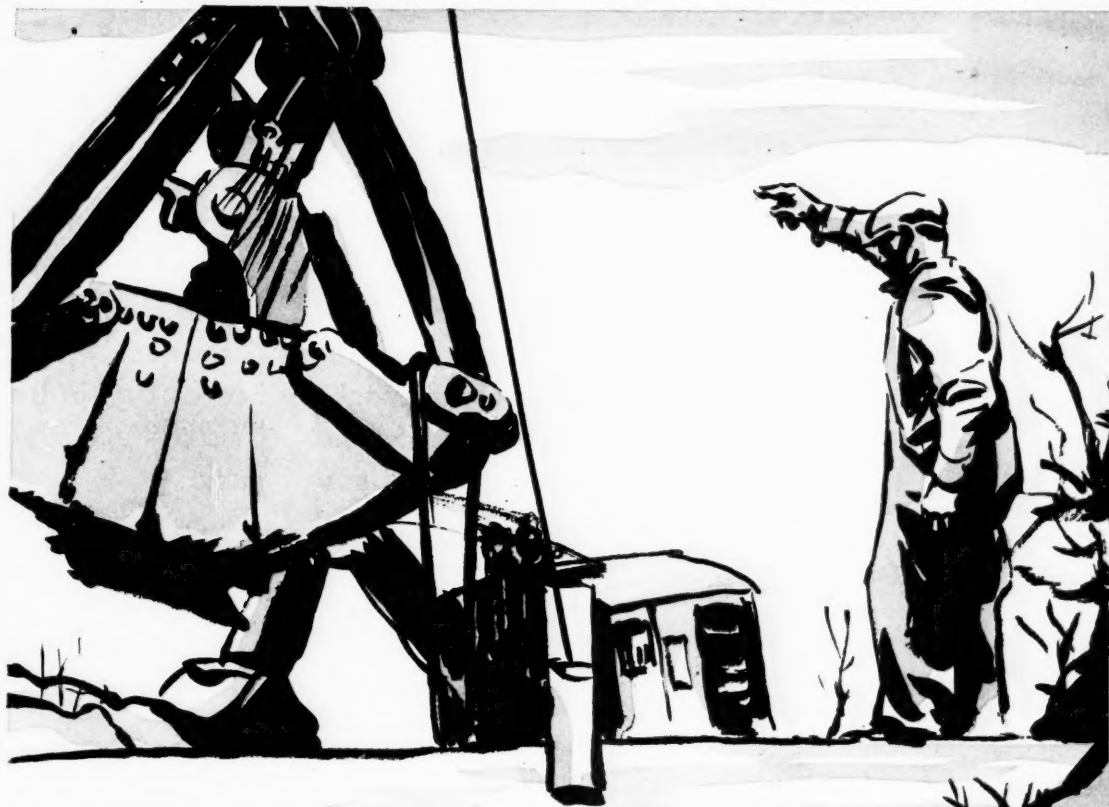
For excavation and grading, Red Cross Extra, du Pont Special Gelatin, Red Cross Blasting FR, and the blasting powders with their various granulations, comprise a group of du Pont explosives capable of effective, economical performance under the conditions encountered in railroad construction of today.

TECHNICAL SERVICE

Du Pont Technical Service is based upon the extensive and practical experiences of explosives engineers who have been identified with the nation's principal construction projects. Users of du Pont explosives have found the Technical Service to be a reliable, efficient and practical means of solving explosives problems.

FURTHER back toward nature than any other ferrous material used for underground mains, and among the oldest of such materials, cast iron pipe as made today is the modern product of highly specialized, constantly-

progressing techniques. For example, up to a few years ago it was considered commercially impracticable to cast gray iron in a metal mold without chill. Yet that "impossibility" is daily achieved by centrifugal casting units at Burlington, Birmingham and Bessemer in the manufacture of Super-de Lavaud Pipe.



U.S. cast iron PIPE

Cast iron and alloy cast iron pipe centrifugally or pit cast—for water works, gas, sewerage and drainage service as well as industrial uses involving corrosives.

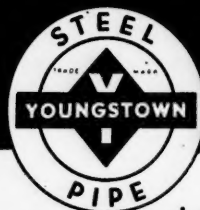
U. S. PIPE & FOUNDRY CO.
BURLINGTON, NEW JERSEY

Foundries and Sales Offices throughout the U. S.

SUPER-DE LAVAUD CENTRIFUGAL CAST IRON PIPE

U. S. Pit Cast Pipe U. S. Threaded Cast Iron Pipe U. S. Mechanical Joint Pipe
U. S. Ni-Resist Cast Iron Pipe U. S. Flexible Joint Pipe U. S. Cast Iron Culverts
Alloy and Gray Iron Castings U. S. Cast Iron Roof Plates

YOUNGSTOWN



In the production of Youngstown Steel Pipe the Inspection Department is entirely independent of the Manufacturing Department. Every inspector is authorized to be rigid and relentless

and to insist upon the elimination of any length of pipe which in any way falls short of the quality you have a right to expect under the "YOUNGSTOWN" trademark.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - - YOUNGSTOWN, OHIO

Tubular Products; Sheets; Plates; Tin Plate; Bars; Rods;
Wire; Nails; Conduit; Unions; Tie Plates and Spikes

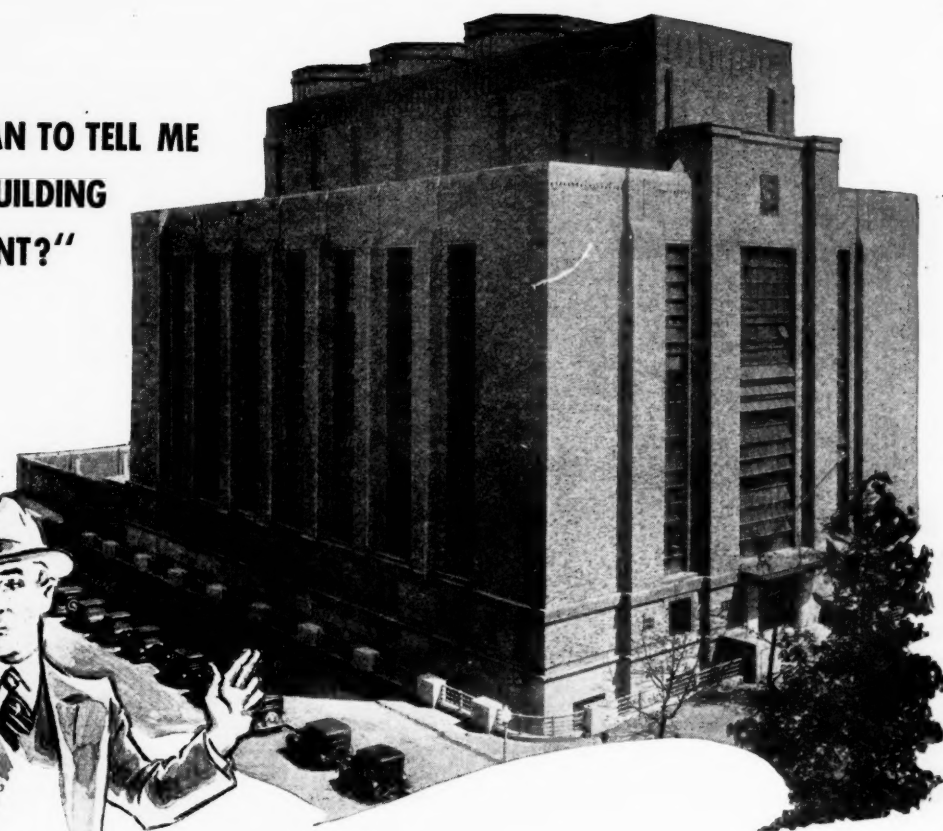
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*Visit "The Romance of Steel" and the Youngstown Exhibit
at the Great Lakes Exposition, Cleveland*



Pipe "in the raw" -- molten steel
pouring from Bessemer Converter

"SENATOR, DO YOU MEAN TO TELL ME
THAT BEAUTIFUL BUILDING
IS A BOILER PLANT?"



IT'S easy to understand the amazement of the senator's friend, for certainly the imposing architecture of the new central heating plant for U. S. Government Buildings suggests something far removed from a boiler house. Situated in a group of Washington's monumental public buildings, its exterior achieves the purpose of the designer, *Paul Cret*, to attain architectural harmony with its surroundings, as effectively as the equipment it houses achieves the purpose of government officials and the consulting engineers, *United Engineers & Constructors, Inc.*, to provide steam with maximum economy and dependability.

Six steam generating units are installed, each having a maximum capacity of about 200,000 lb of steam per hr and consisting of a CE Sectional Header Boiler, CE Furnace (partially water-cooled) and a CE Multiple Retort Stoker.

During January 1936, these six units consumed 16,588 tons of coal, far less than would have been required had the buildings been heated by individual plants. Since the plant was placed in operation in January 1934, its operation has been characterized by exceedingly low maintenance cost and high efficiency; in fact, efficiencies above guarantee points have been attained.

Whether your boiler plant be large or small, you can have the economy and dependability of CE equipment. The fact that CE equipment has been selected for so many of the largest and most noteworthy plants of the country is your assurance of these advantages. For requirements ranging from 30 hp boilers and small stokers up to units capable of producing over 1,000,000 lb of steam per hr, the CE line provides the right answer to every need . . . Combustion Engineering Company, Inc., 200 Madison Avenue, New York. Canada: Combustion Engineering Corp., Ltd., Montreal.

CE PRODUCTS

All types of

BOILERS

STOKERS

FURNACES

PULVERIZED FUEL
SYSTEMS

HEAT RECOVERY
EQUIPMENT

Fabricators of pressure vessels,
tanks, etc., welded or riveted
in carbon, alloy or clad steels



COMBUSTION ENGINEERING

MANUFACTURING DIVISIONS: The Hedges-Walsh-Weidner Company, Chattanooga, Tenn.; Heine Boiler Company, St. Louis, Mo.; The Raymond Brothers Impact Pulverizer Co., Chicago, Ill.; Coshoceton Iron Company, Monongahela, Pa.

SEPTEMBER NINETEEN THIRTY-SIX

A-303

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Why I like to buy from my J&L WAREHOUSE

"Because as a southern manufacturer I can always get—quickly—from my J & L Warehouse in either Pittsburgh, Cincinnati or New Orleans the exact quality, size and shape of steel that is most satisfactory for my special needs."

"Because J & L Warehouses have modern equipment for cutting, bending and forming steel to the exact size and shape I need. By getting the steel I need in this ready-to-use form, I save time, reduce manufacturing costs, and increase my profits."



"Because I often find that by using one of the special grades of steel which are a part of the complete stocks carried in all J & L Warehouses, I can reduce my operating costs, make a better product and increase my profits."



"Because I know that back of the J & L Warehouse is a complete mill organization with every facility for maintaining the uniform and dependable high quality that always means so much to the steel buyer."



The above are typical statements made by J & L Warehouse customers. They indicate a few of the many money-saving and profit-making advantages of J & L Warehouse Service for the South. The next time *you* need steel, save time, money and trouble by ordering from one of the J & L Warehouses in the South—located at New Orleans, Cincinnati and Pittsburgh.

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH, PENNSYLVANIA



J & L WAREHOUSES

CHICAGO
Virginia 1600

CINCINNATI
Main 2324

DETROIT
Plaza 0470

NEW ORLEANS
Franklin 1131

PITTSBURGH
Hemlock 1000

NEW YORK (Long Island City)—Ironside 6-8700 . . . Operated by National Bridge Works Division of Jones & Laughlin Steel Service, Inc.

LOUISVILLE—Magnolia 2140 . . . Stock of Bars for Concrete Reinforcement and Bar Fabricating Yard

MEMPHIS—6-4836 . . . Distributing Warehouse for Pipe, Sheets, Spikes and Wire Products. Reinforcing Bar Warehouse and Fabricating Shop



MANUFACTURERS RECORD FOR



EVER TRY
*to wear out
a Tiger?*



IT'S more than a man's size job. American Tiger Brand Wire Rope has established hundreds of service records—that's how hard it is to wear it out.

Wire rope is so important to you that you should play safe. You need wire rope you can depend on—wire rope that has strength and is safe. Call on American Steel & Wire Company engineers to help you any time, any place.

**AMERICAN TIGER BRAND WIRE
ROPE**

AERIAL TRAMWAYS

AMERCLAD ALL-RUBBER CABLES

ELECTRICAL WIRES AND CABLES

TIGER WIRE ROPE CLIPS

AMERICAN STEEL & WIRE COMPANY

208 S. La Salle Street, Chicago · Empire State Bldg., New York



COLUMBIA STEEL COMPANY

Russ Building, San Francisco

United States Steel Products Company, New York, Export Distributors

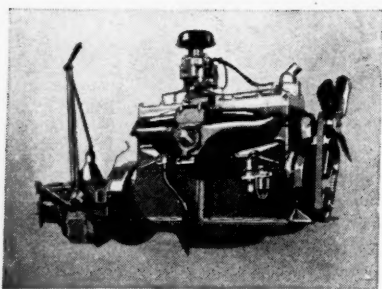
UNITED STATES STEEL

SEPTEMBER NINETEEN THIRTY-SIX

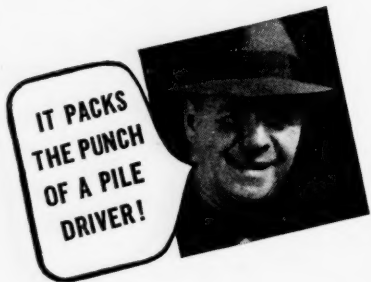
America's Toughest Truck!



TOUGH TRUCKS ARE SAFE TRUCKS FOR OWNER AND DRIVER



Look to the engine for a truck's real worth! Reo's famed Gold Crown and Silver Crown engines have greater bearing area and larger crankshafts than most trucks of even higher price. That means longer life, less vibration, higher compression—more value for your money! Get the facts.



ASK fleet owners or drivers of Reo Trucks what they think of Reo safety and Reo's *plus* margin of strength and durability.

They are in unanimous agreement: Reo is "AMERICA'S TOUGHEST TRUCK"! This is a remarkable tribute to faultless performance under severe hauling conditions.

Reo engineers have overlooked nothing that could add stamina or economy to truck operation. Chassis are designed to carry peak loads over the roughest roads. The famous Gold Crown and Silver Crown truck engines of chrome nickel have sturdy

Lo-Ex aluminum pistons and valve seat inserts. Seven-bearing crankshafts and 4-speed transmissions insure long life and flexibility. Positive hydraulic brakes provide an additional safety factor.

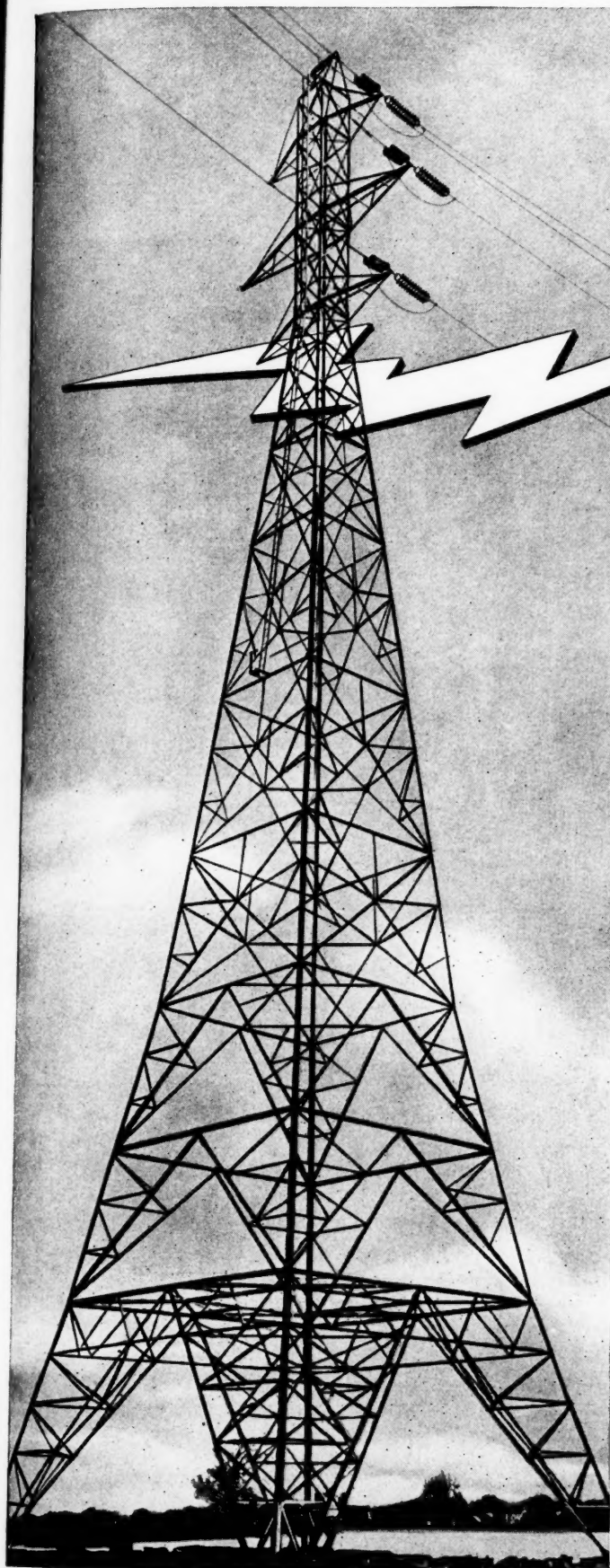
Now at Reo's new all-time low prices, Reo's 15 truck superiorities are available to every business. Be sure to check Reo features and Reo *guaranteed performance* before you buy any new truck.

Reo Speedwagons and Trucks range from ½ to 4-6 tons. Chassis prices from \$445 up, f. o. b. Lansing, plus tax. *½-ton chassis f. o. b. Lansing, plus tax.

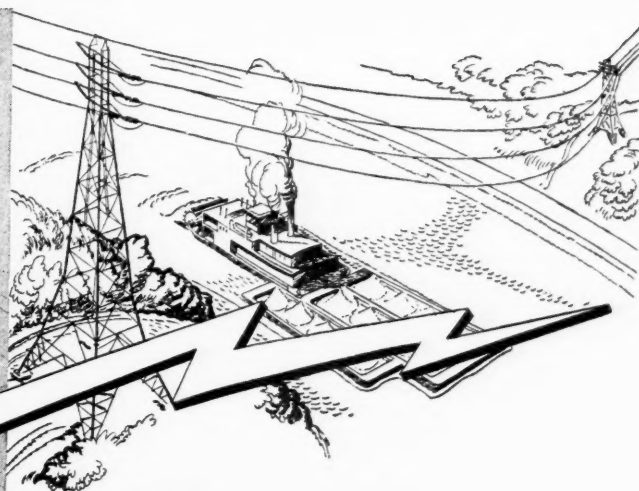
\$445*
AND UP

REO SPEEDWAGONS AND TRUCKS

MANUFACTURERS RECORD FOR



High Voltage Line for Appalachian Electric Power Co.



Towers carry **1917 FOOT SPAN OF** **132,000 VOLT LINE** *over Ohio River*

THESE two river-crossing towers typify the most advanced design for economy and strength on transmission lines. Located at Kenova, W. Va., each is 240 feet in height . . . with a maximum leg-spread of 70 feet at ground level . . . carrying the river span of 1917 feet . . . with spans on either side of 1460 and 1552 feet tying into the 50 mile long line with its 88-foot towers in either direction. They will carry a double circuit installation, though now strung for single, extending from Institute, W. Va. to South Point, Ohio.

An experienced department of American Bridge Company designs, fabricates and erects steel towers of all types to carry power or radio lines, electrical sub-stations and steel structures for all branches of industry. Call on American Bridge Company engineers to aid you in your work.

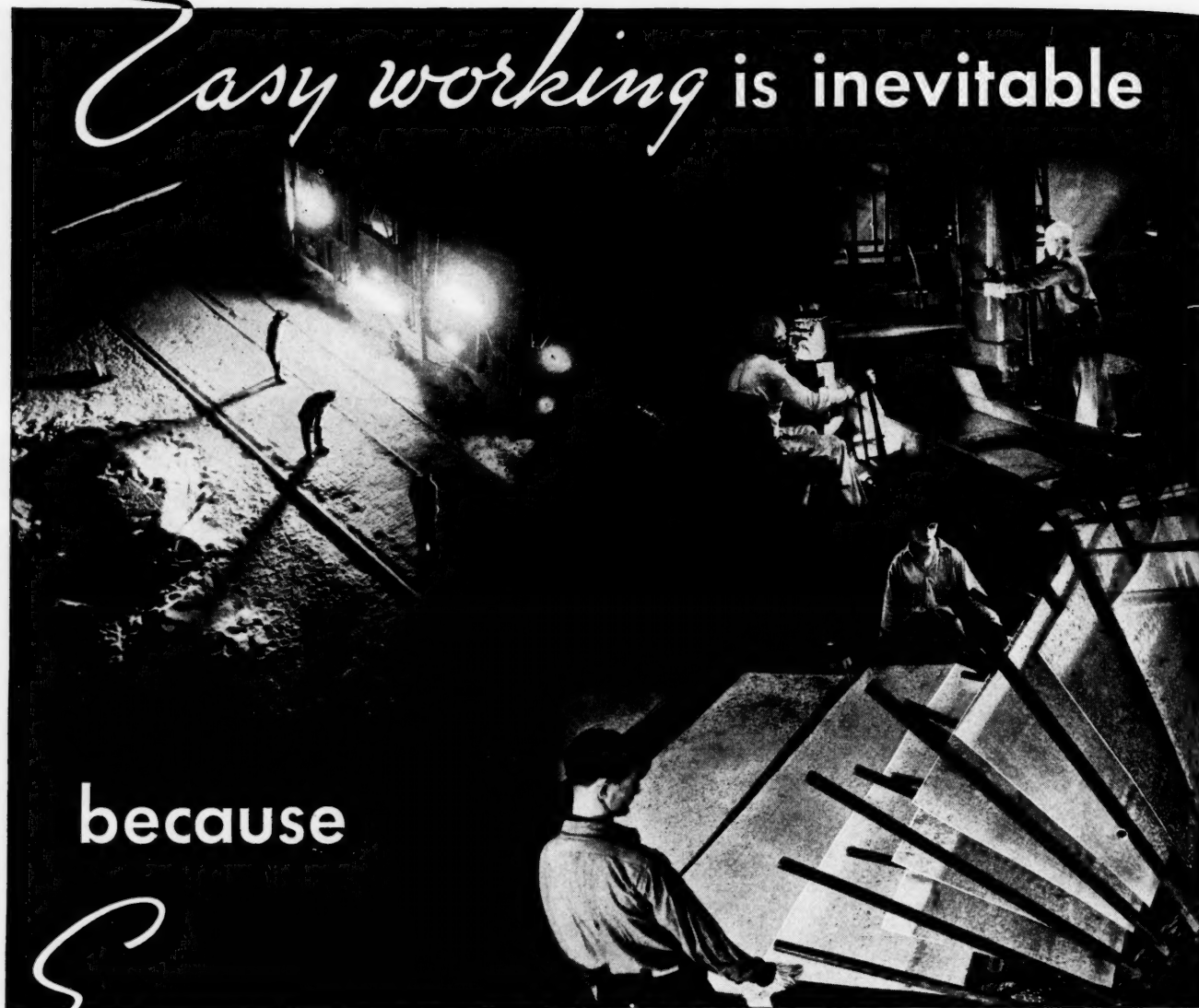
AMERICAN BRIDGE COMPANY
General Offices: Frick Building, Pittsburgh, Pa.



Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, St. Louis, Salt Lake City; Pacific Coast Distributors: Columbia Steel Company, San Francisco; Export Distributors: United States Steel Products Company, New York City.

UNITED STATES STEEL

Easy working is inevitable



because

Every operation contributes to it

BETHLEHEM Galvanized Sheets can't help but be uniformly ductile and easy working. The development of these qualities is kept in view at every step of manufacture. In making the steel in the open hearth, in teeming the ingots, at the various stages of rolling the thought is always, "How can the best forming qualities be obtained?"

The result is sheets that excel in uses involving fabrication. They take a true, even bend, that holds to shape. Their use in cornice work makes for straight edges; in

duct work, for smooth, even seams. No matter how severely they are bent they don't crack.

These good bending qualities coupled with their bright, evenly spangled galvanizing, uniform in weight and so tightly adherent that it doesn't flake or peel, result in a better job in any application involving bending.

For exposed uses the same good qualities can be had in Beth-Cu-Loy Sheets, made of rust-resisting copper-bearing steel, costing but a trifle more.

BETHLEHEM STEEL COMPANY



Records Prove **NATIONAL COPPER-STEEL PIPE** *Lasts 2 to 3 times longer*

CUTS MAINTENANCE COST OF INDUSTRIAL PIPE LINES

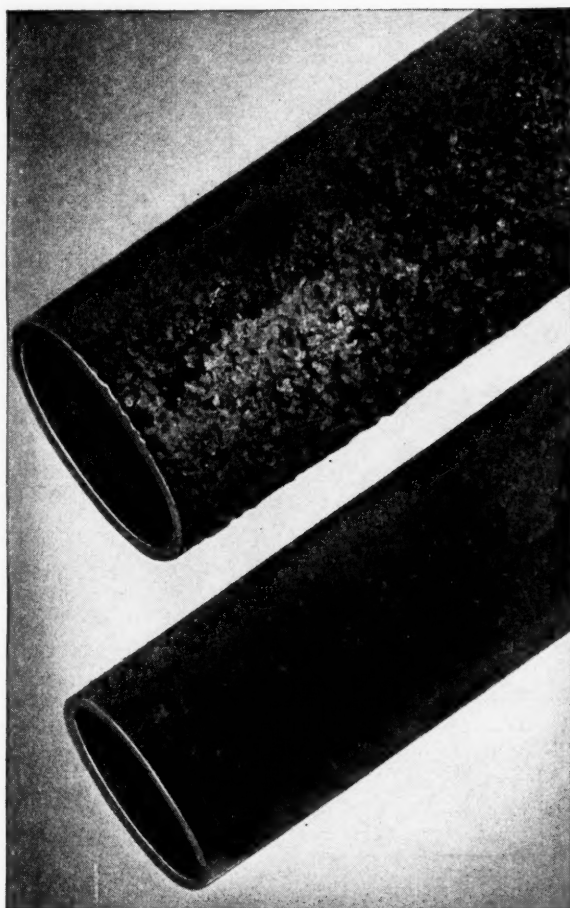
IN industrial service one of the problems with pipe is atmospheric corrosion. Around the plant and other types of operations, pipe is frequently subjected to alternate wet and dry conditions.

The alternate wet and dry type of corrosion is also often active on the inside of soil, waste and vent lines, rain leaders, and steam returns. Here, due to local conditions, ordinary pipe is sometimes short-lived. And when pipe must be replaced—that's costly.

Fortunately, there is a pipe that has special resistance to this type of corrosion . . . National Copper-Steel Pipe. Many on-the-job tests and installations show that, compared with ordinary pipe, this rust-resisting pipe has given two to three times the length of life.

The original cost is but a trifle higher. By reducing costly replacements, National Copper-Steel Pipe actually costs less in the long run.

Send for literature—how National Copper-Steel is cutting pipe costs—in factories, office buildings, public buildings, residences. It's interesting—and may prove profitable!



NON-COPPER PIPE

showing effect of atmospheric corrosion (after seven years) in moist mill atmosphere.

COPPER-BEARING PIPE

Showing little or no effect after years of service in the same corrosive atmosphere.



LOOK FOR THE GREEN COLOR!

National Copper-Steel Pipe is marked as follows: Black Pipe—Smaller sizes colored green. Larger sizes, two green stripes running lengthwise. Galvanized Pipe—All sizes, two green stripes running lengthwise.

NATIONAL TUBE COMPANY
PITTSBURGH, PENNSYLVANIA

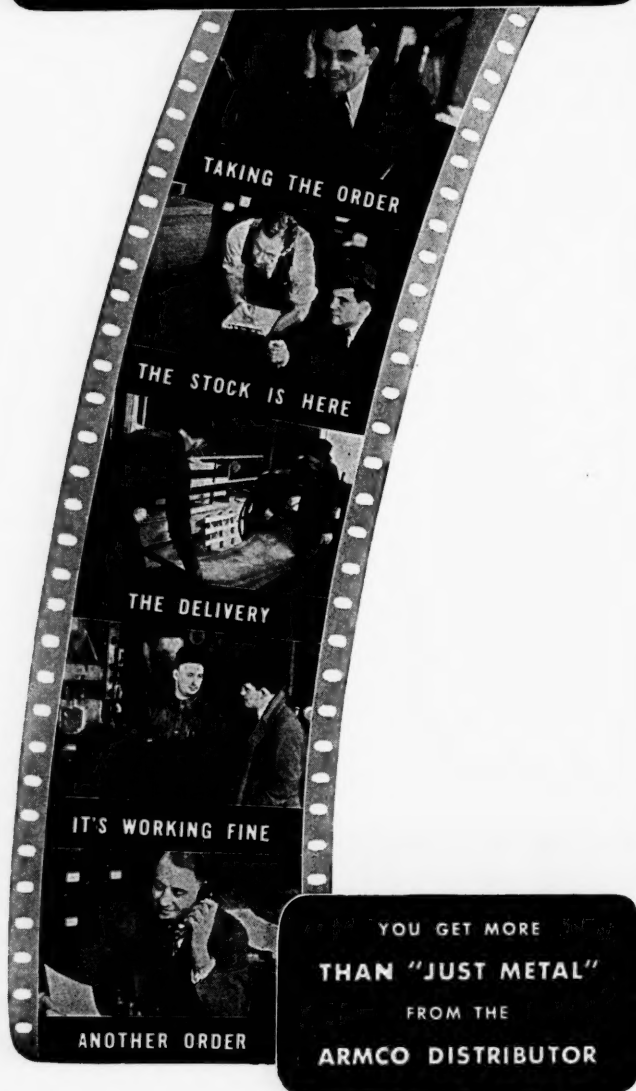
Columbia Steel Company, San Francisco, Cal.
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UNITED STATES STEEL

**A DAY WITH THE
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**A CUSTOMER WANTS STEEL
NOW**



• When you need flat-rolled iron and steel in a hurry, and insist upon more than average quality and service, it's a good idea to get the Armco Distributor on the telephone.

Whether it's a commodity grade or a special grade, he'll see to it that your order goes through in double-quick time . . . and what's more the quality will be just what you want.

The American Rolling Mill Co.,
Executive Offices, Middletown, O.



ARMCO
SHEETS • STRIP • PLATE • COILS



Salt treated sub-flooring laid on Creosoted stringers and nailing strips, each treated by our Pressure Process.

The Permanence of
TREATED WOOD
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Eliminate the need for expensive Replacements and Repairs by the use of Structural Lumber preservatively treated by our Pressure Processes with Standard, approved chemicals. Treated Lumber has many times the life of Untreated Lumber and will give a lifetime of satisfaction with low maintenance costs.

Detailed Information, Prices and, if necessary, the services of one of our Engineers may be had without cost to you, by writing our territory Sales Office or communicating direct with

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WOOD PRESERVING
CORPORATION**

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International Trucks

*handled 80 per cent
of the heavy hauling at
Boulder Dam*

IN 1931 Six Companies Inc. began the building of Boulder Dam. Today the tourists look down in awe as they ride a highway 730 feet above the Colorado River bed. The finished barrier blocks the canyon. Boulder, world's greatest dam, stands complete—two years ahead of schedule.

The certificate of appreciation presented to International Harvester by Six Companies Inc., and reproduced here, is a reminder of the service rendered by International Trucks in this celebrated project. Other equipment of this engineering age also played its part, but to Internationals fell the major share of the heavy hauling.

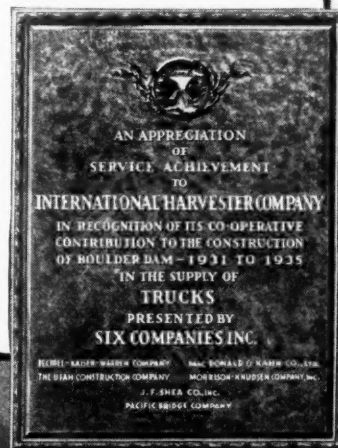
We ask the construction industry and all users of trucks to note that the number of Internationals at Boulder Dam practically doubled all other heavy-duty makes combined—outnumbered any other single make in excavation service by more than five to one. The great fleet of International Trucks handled 80 per cent of the heavy hauling, accounted for

something like a million loads into and out of the canyon, performed brilliantly from start to finish in the fifty months of Herculean action in the building of Boulder Dam.

International Trucks, from Half-Ton to powerful Six-Wheelers, serve all hauling needs. Chassis prices \$415 up, f. o. b. factory. Low time-payment rates apply on all models. Company-owned branches and dealers at your service.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 S. Michigan Ave. Chicago, Illinois

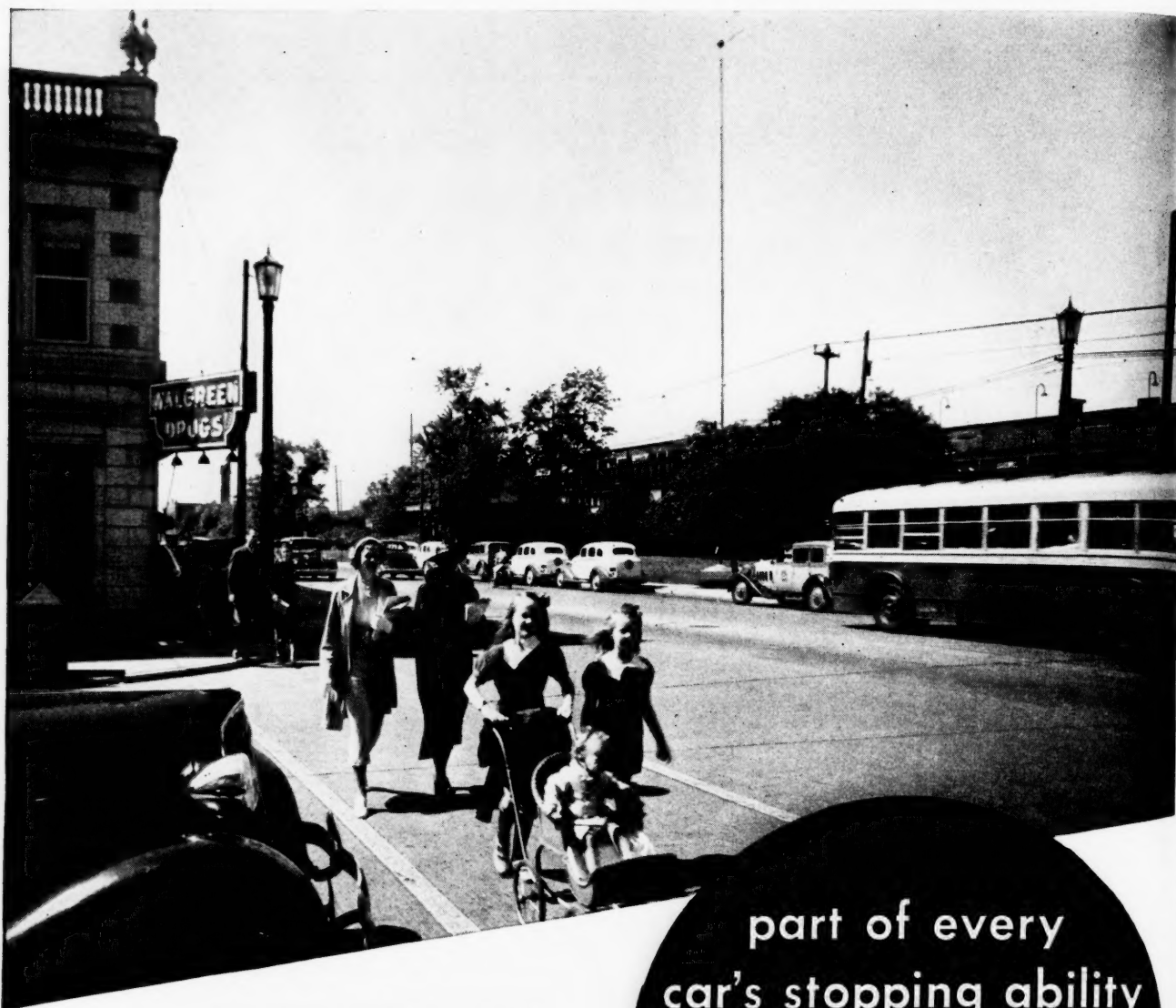
Boulder, world's greatest dam, as it now stands complete in the canyon of the Colorado. Before construction began, millions of yards of rock and earth were removed. Now, nearly 6,000,000 barrels of cement and 60,000 tons of steel and other metals form the barrier impounding a lake with an area of 227 square miles.



NOW—at BONNEVILLE

In evidence of lasting quality and stamina, veteran Boulder Internationals are working today in the making of Bonneville Dam, on the Columbia. This illustration shows a new 5 to 10-ton International Model A-8 at Bonneville.

INTERNATIONAL TRUCKS



This busy Evanston crossing is concrete—and is one reason why Evanston has repeatedly won traffic safety awards for cities in its classification.

THE stoplights change, the whistle blows—and millions of cars must stop millions of times on busy city streets. No matter whether these stops are due to regular traffic interruptions or to emergencies, safety demands that they be made swiftly and surely without skidding or slipping.

When you pave with concrete, you provide traffic with the safest of all road surfaces. Its fine, gritty texture offers maximum traction under any weather conditions; reduces skidding to the absolute minimum.

Concrete roads and streets have a flat crown and even contour that make them usable over their entire width—cars don't tend to bunch up dangerously in center lanes; passing is safer. Night-time visibility is better on concrete's light

part of every
car's stopping ability
is in the road
you stop quicker on

CONCRETE

gray surface, whether the illumination is from street lights or from automobile headlights.

Concrete saves money for taxpayers because it costs less than any other pavement of equal load-carrying capacity. It lasts longer. Its surface maintenance cost is far less. It saves money for motorists in reduced gas, tire and car repair bills.

PORTLAND CEMENT ASSOCIATION
Dept. A9-21, 33 West Grand Avenue, Chicago, Ill.

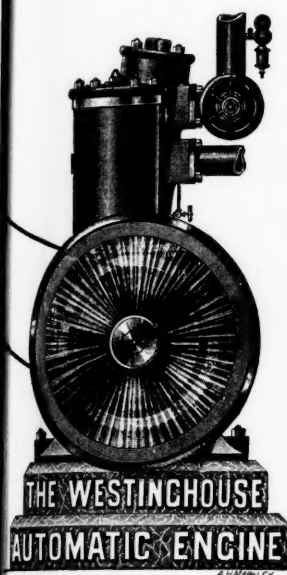
MANUFACTURERS RECORD FOR

ADVERTISING in the "eighties"

Issue December 4, 1886

578

BALTIMORE MANUFACTURERS' RECORD.



THE WESTINGHOUSE

—MANUFACTURERS OF—

The Westinghouse Automatic Engine.

PRICES REDUCED.

The condemnation of our competitors is the measure of our success.

The "Junior" Automatic Engine.

15, 25, AND 35 H. P. ONLY.

You will never know how cheap it is till you ask, nor how good it is till you try.

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Engineers and Contractors for Central Stations for Incandescent

WESTINGHOUSE ELECTRIC COMPANY

Isolated Incandescent Plants,

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Direct-Connected Centrifugal Pumping Motors

Designers of Special Applications

THE WESTINGHOUSE ELECTRIC COMPANY,

Manufacturers of ISOLATED INCANDESCENT PLANTS,
and Contractors for CENTRAL STATIONS.

It is believed that the advantages of our system place us beyond competition.
Capital investing for dividends will do well to close no contracts till
our proposals are considered.

THE WESTINGHOUSE ELECTRIC COMPANY,
PITTSBURGH, PA.



16 C. P. LAMP, (half-size.)

IT WAS IN 1882 that the MANUFACTURERS RECORD began to emphasize the manufacturing opportunities of the South. At that time annual agricultural values were \$756,903,000, as compared to manufacturing at only \$622,840,982. Manufacturing in the South reached its peak in 1929 with production valued at \$11,724,840,000, exceeding agricultural values by \$8,311,840,000.

From the time of its founding the MANUFACTURERS RECORD has encouraged the establishing of appropriate industries, and the investment of capital in Southern enterprises.

In November 1908, Paul T. Brady of the Westinghouse Company said:

"The South can have but faint conception of the debt of gratitude it owes to the MANUFACTURERS RECORD for the work it has done in attracting attention to the opportunities for investment which the South contains.

"As an example of what the MANUFACTURERS RECORD is doing and has done, let me instance my own case. Up to four or five years ago I had never been south of Mason and Dixon's line. Casually I began reading the MANUFACTURERS RECORD, and I soon became interested in the presentation of Southern opportunities which it made. I finally succeeded in getting some Northern capital interested in Southern enterprises.

"I have found the South a land full of opportunities for profitable investment. Never has there been so friendly an interest taken in the opportunities so ably and persistently presented through the columns of the MANUFACTURERS RECORD."

Westinghouse has been a consistent advertiser in the MANUFACTURERS RECORD since the eighties. The advertisement reproduced herewith shows the products advertised at a time when science and invention were just getting under way and the electric light was in its infancy.

MANUFACTURERS RECORD

Published Monthly

BALTIMORE, MARYLAND

Roebbling...

*The pacemaker in
wire rope development*



THE most exacting basis for judging wire rope performance is **AVERAGE SERVICE.**

This is the basis advocated by Roebbling, in which rope cost per ton of material handled, or per other unit of service measurement, is based not on the service of a single rope but on the average service of several ropes.

John A. Roebbling's Sons Co.,
Trenton New Jersey

• Manufacturers Record •

INCOME AND TAXES

DEPARTMENT of Commerce reports state that business in the United States is headed for the largest income since 1929. If current conditions continue to hold for the remainder of the year to the level indicated by the industrial activity of the past six months, it is estimated the national income will approximate \$60,000,000,000 as compared with \$53,000,000,000 in 1935. While this indicates an improvement of \$7,000,000,000 in one year, it is still 26 per cent under the peak income of \$81,034,000,000 in 1929.

Should the prediction prove correct, however, business will likely be in the favorable position of balancing earnings and expenses for the first time in seven long years. In 1935 business paid out \$628,000,000 more than it earned and since the depression has dipped into its reserves to the extent of some \$20,000,000,000.

Manufacturing income has been rising since its drop from \$18,058,000,000 in 1929 to \$8,428,000,000 in 1933. The estimate of the National Industrial Conference Board of \$11,748,000,000 for 1935 is still approximately 35 per cent below the 1929 level. The greatest decline occurred and has continued in the producer goods branches of manufacturing, with the construction group being the most severely affected, and it is in these industries that recent progress has been most encouraging.

Little publicity and less credit has been given by public officials and politicians to business for its part in cushioning the effects of the depression. Its vast expenditures for labor and dividends under constantly mounting deficits, while being compelled to pay higher and higher taxes, have been far greater than the Federal Government appropriations which can only be repaid by collecting still more taxes from business and the people.

Since 1933 four major tax laws have been enacted following previously expressed hopes that new taxes would not be necessary.

The total Federal, State and local government cost is running about \$16,500,000,000 a year and the national debt for the Federal Government alone has been raised to the fantastic sum of \$34,189,000,000, the highest in the nation's history. At a time when every encouragement is needed to advance sound recovery and

create private employment, the tax gatherer is demanding increased revenues which are often used to develop and maintain government enterprises that directly compete with private business.

The tax burden recognizes no class distinction despite political efforts to conceal its ultimate resting place. It cannot be shifted to the "rich" without doing infinitely more harm to the "poor," because taxes must come out of earnings and earnings come from the prices paid by the consumer.

The tax burden is oppressive, reducing the ability of business to pay higher wages and to make expansions and increase private employment. Under the new tax law it will be even more difficult for business to set up reserves for further development or for protection in time of dullness. Surplus capital in recent years was the salvation of many industries and employees' jobs.

Industry, the target of the demagogue, could appreciably increase wages were it not over-burdened with high taxes and expected new imposts, that will have to be met even though operating at a loss. Industry is now paying 34 cents in taxes for each dollar spent on payrolls. Also, for each dollar paid in dividends, some of which come out of reserves, the tax load on industry is \$1.42, and taxes amount to \$2 per share of common stock and 8 per cent on sales.

The tax burden is oppressive, cutting deeply into the consumer's ability to purchase necessities. Payrolls have increased, but the government is taking a greater share of the worker's earnings. One-third of the average person's expenditures for food, clothing, electricity, gas, fuel, rent, etc., represent taxes. When the new Social Security Act (in reality another tax law) is in operation, a larger tax slice will be taken from business and wages.

The average annual cost of government per family is about \$580 and the total public debt is \$2,000 per family. The Government has spent more than \$2,000,000,000, paying farmers and producers not to produce, added 250,000 persons to the Federal payroll and set up 53 new bureaus for which the people are paying higher and higher taxes. But high as taxes are now, the Federal Government has been spending \$2 for each \$1 collected from the over-burdened taxpayers of the nation. Wasteful public spending will cease only when the average person realizes that he is putting up the money and not the so-called rich "other fellow."

FRUITS OF DEVELOPMENT

SAVANNAH is to hold a great civic celebration October 1 to dedicate the new \$7,000,000 kraft paper and bag plant of the Union Bag and Paper Corporation. The South as a whole can join with Savannah in celebrating an event which marks a new industrial era. In the completion of this plant is obtained the first fruits of development from a broader expansion of pine pulp and paper making in the Southern States where approximately \$40,000,000 have been invested in new establishments in the past year.

Pulp and kraft paper production have been making progress in the South for some years. This region, in fact, became a leading kraft producing area of the United States some time ago. Opportunities for further expansion were recognized, but the successful work of those responsible for the bringing in and establishing of the great plant at Savannah was the impetus that started definite action in other parts of the South.

Today there are more than 7 great pulp and paper mills under way or in prospect, all in the South.

Before completion of the initial plant at Savannah at a cost of about \$4,500,000 and before it started operation, a \$2,750,000 addition was announced which will bring the total investment in this one project to more than \$7,000,000.

Construction is being pushed on the \$4,000,000 paper mill of the Crossett Lumber Co., at Crossett, Ark.; on the \$3,500,000 pulp mill at Houston, Tex., for the Champion Fibre Co., which also has a large paper mill at Canton, N. C., where modernization and expansion work was undertaken about a year ago; on the \$7,500,000 kraft linerboard plant at Port St. Joe, Fla., for the St. Joe Paper Co., in which the Alfred I. duPont interests are identified, and on the \$5,000,000 pulp and kraft linerboard mill at Charleston, S. C., for the West Virginia Pulp & Paper Co.

The proposed \$5,000,000 pulp and kraft mill at Fernandina, Fla., for the Container Corporation of America, and other developments likely at other points in the Southeast with the possibility of an announcement soon of a pulp and paper mill at Brunswick, Ga., indicate the recent progress that has been made in the South in expanding the domestic paper industry.

What these new plants mean to the South in opening up new markets for its forest products, in creating employment and wealth, and in building an industry to make the United States free from foreign sources of supply of pulp and paper for which we have been paying about \$175,000,000 a year, is indicated by the extent of the operations of the first of these new plants.

The operation of the first unit of the Union Bag and Paper plant at Savannah will bring in cash to Georgia citizens almost \$1,500,000 annually for payrolls and wood purchases. Nearly 2,000 persons will be employed in the manufacturing processes, from timber lands to bag factory.

Construction of the first unit of the plant was begun about a year ago on a 370 acre tract, on which detailed information has been published in previous issues of the *Daily Construction Bulletin* and in the *MANUFACTURERS RECORD*. The plant itself is a series of 14 departmental buildings, some more than 500 feet in length, all connected and each having a part in the process whereby slash pine goes into the plant in logs and comes out as a finished product of kraft paper and bags. The first unit was built to produce 135 tons of kraft pulp

daily and 125 tons a day of paper. When in full operation the plant will have a capacity of about 12,000,000 bags a day. The new addition under construction will more than double the productive capacity of the present mill. Nearly 3 miles of railway tracks serve the plant and its yards, and docking facilities adjoin the plant on the Savannah River. Although the corporation has great holdings of timber lands it expects to give Georgia farmers added cash income by buying wood from them whenever possible.

While the new pulp and paper mill expansion in the South is for the production of pine pulp and kraft paper, bags, or linerboard, without question it will only be a short time before newsprint and white paper also will be manufactured in volume from Southern pine.

With successful commercial operation shown by experiments of Dr. Charles H. Herty and associates, lack of financing is the only apparent drawback to this new expansion in the Southern pulp and paper field. That obstacle will be overcome. Logical progress cannot be stopped indefinitely. The South will come into its own as a manufacturing center of newsprint and white paper, as it has begun to dominate the manufacture of kraft paper and boxboard.

LOSING TAXABLE LANDS

WHO'S to pay the taxes when Government projects remove lands from State and local tax rolls? Some facts relating to TVA tax payments in Alabama and those paid by the Alabama Power Company should awaken every taxpayer to a government policy and procedure that will have a serious effect on the revenues of local regions where TVA and other Government competitive projects are operating.

In discussing the TVA tax payments to the State, Thomas W. Martin, president of the Alabama Power Company, said:

"The payment of \$40,000 by the Tennessee Valley Authority to the State of Alabama and the possible payment of an additional \$10,000, on account of power sold at Wilson Dam, appears to cover the amount to be paid to the State for 1936, in lieu of taxes, and is to be compared with approximately \$2,500,000 paid by the Alabama Power Company during the past year. TVA pays no Federal, county or municipal taxes of any kind, nor does it pay special taxes to the State for schools, such as the kilowatt hour taxes paid by the Alabama Power Company amounting last year to over \$330,000.

"Schools and other public agencies in our State may well realize that over 235,000 acres are being acquired by the Tennessee Valley Authority in various counties in north Alabama in connection with its dams being built for power development. Because the constitutional excuse for the TVA development of power is navigation, the lands will automatically be removed from the tax rolls, thus reducing the revenue of the State and the funds distributed by it for schools to every county in the State. In addition, are the distribution lines purchased and acquired by TVA at a cost of millions of dollars, which it claims to be wholly exempt from taxation.

"Let the citizen compare this, however, with the fact that the Alabama Power Company purchased nearly 100,000 acres of land for its reservoirs in middle Alabama, on the Coosa and Tallapoosa Rivers, and every acre of this land, although submerged, is assessed for taxation in amounts that average over 100 per cent higher than the assessments of lands surrounding these reservoirs; and State school taxes derived from these lands are distributed to every county in the State.

"The payment of \$40,000 or \$50,000 by TVA will by no means make up for the loss in taxes on account of properties being removed by it from the tax rolls, and the school funds will sustain the largest losses."

It is very evident that for Alabama to maintain a revenue formerly supported through the taxes from

these now non-taxable lands, it must seek other sources.

In Tennessee, the TVA proposes to start additional projects which further reduces tax rolls. Projected entrance into Memphis, Chattanooga and Knoxville by the TVA will result in direct competition with private concerns. The Tennessee Electric Power Company charged that the TVA was attempting to undermine its investment in Chattanooga by fostering the establishment of a directly competitive residential distribution system in the city.

A preliminary injunction to restrain the TVA from further activities has been filed by 19 operating companies in the U. S. District Court at Knoxville. The Court was asked to grant the injunction on the ground that the utility companies in the Tennessee Valley were "faced with the complete and rapid destruction of their entire business," as the TVA now has, or is soliciting, contracts to serve 22 cities in Tennessee, 11 in Mississippi, 7 in Alabama and one city in Georgia.

It was pointed out that the TVA is proceeding with the construction of a complete network of transmission and distribution lines which "have no economic use or value except to distribute power in direct competition with the property and business" of the operating utilities; and that the TVA is appropriating the customers and markets of these utilities and interfering with their present business relationships, on the basis of unfair, confiscatory rates made possible only by subsidies from Federal and State taxpayers.

The 19 companies filing suit pay more than \$14,000,000 a year taxes, while the TVA paid only a fraction of that amount, and only did that as a gesture, declaring that it could not be forced by any State or community to bear its share of the costs of government. The inevitable result of such a policy carried far enough is the insolvency of all State and local governments and an alarming restriction of the tax base.

UNFAVORABLE TRADE BALANCE

EXCESS of imports over exports for the first 7 months of the year amounts to \$24,091,000, with July purchases from abroad about \$15,085,000 more than sales to foreign countries.

Foreign Trade, 1936

	July	7 Months
Imports	\$193,409,000	\$1,356,562,000
Exports	178,324,000	1,332,471,000
Excess of Imports	\$15,085,000	\$24,091,000

It is inconceivable that the United States with its vast resources and developed industrial capacity should be buying more from foreign producers than we sell to foreign consumers. And yet, as a nation, we have curtailed our output to pursue a policy of scarcity.

With the prediction made by qualified judges that the 1936 export balance will be the smallest since the beginning of the century, surely it is time to call a halt to a benevolent foreign trade policy that is increasingly adding to foreign competition with American producers and labor. The theory that we must buy more from abroad in order to sell more sounds well, but foreigners have bought always from us only such things

as they required, and is all the foreign trade in the world worth the loss of our home market? In the present experiment, to judge from the trend so far, we stand to lose both at home and abroad! The record of imports and exports recently shows that the more we buy from abroad the less we sell.

Since the low point of the depression in 1932, our imports increased \$723,000,000, or 55 per cent; while exports were increasing \$670,000,000, or 41 per cent. The value of so-called non-competitive imports increased \$483,000,000, or 30 per cent; while the value of admittedly competitive imports increased \$623,000,000, or about 110 per cent. During 1935 our imports increased \$402,000,000, or nearly 25 per cent, as compared with 1934; while exports gained only \$149,000,000, or less than 7 per cent. The foreign trade figures for July and the first 7 months of this year show that imports have continued to increase proportionately over exports.

Leading competitive imports, aside from coffee, tea, rubber, raw silk and such commodities which are not produced in the United States, have been vegetable oils, woodpulp and paper, hides, skins, tobacco, various grains, fodder and feed, cheese, butter and molasses. Due to the drought following the government's curtailment practices, the United States will buy more food and feed from foreign countries. Millions of bushels of grain, principally corn, will be bought from abroad, increasing the amounts purchased in the past year. More cattle will be bought from Canada and foodstuffs from other countries. Bringing coals to Newcastle is mild compared with what the juggling of our farm policy has brought to American farmers and consumers. Not only have reduced crops caused a rise in prices but they fail to supply domestic demand and to the foreign grower will go the greatest benefit as we reap the results of an artificially reduced output intensified by the drought of this year.

Not only are American farmers adversely affected by the increased imports, but cotton manufacturers, who face the largest imports in cotton goods since 1925, lumber and other American industries are up against a lower tariff policy that is creating ruinous competition and undermining efforts to increase employment in the United States.

The total imports of cotton cloth for the half-year ended June 30, were 63,766,000 square yards, valued at \$5,511,000, with Japanese cotton goods accounting for 45,290,000 square yards. American hosiery manufacturers are seeking relief from Japanese competition which bases its price on labor costs of only a few cents a day.

During the past two years the United States has negotiated 14 "trade agreements" with foreign countries. Many reductions in import duties on agricultural products have been made.

The world's greatest market is the American home market and foreign producers know it, even though our free trade theorists refuse to recognize the fact. With 130,000,000 people having the greatest productive and consumptive capacity of any nation, we have been following a suicidal foreign trade policy that invites with open arms foreign producers to take away the home trade of American business and curtail employment opportunities for American labor.

The more we buy abroad of products made or grown at home the less employment we can give to American workers.

THE BUYING POWER OF SOUTHERN RAILROADS

An Analysis of Expenditures of the Railroads of the South Showing
the Extent of Their Disbursements Which Reach Into Practically
Every Industry and Trade of the United States and Amount
This Year to More Than \$1,000,000,000, When Wages
and Salaries Are Included

SOUTHERN railroad lines increased capital expenditures for additions and betterments by 46 per cent this year over 1935, and maintenance outlays by 6 per cent, according to figures compiled from a survey, made by the MANUFACTURERS RECORD, of the principal railroad systems serving the Southern States.

In assembling this information, itemized expenditures by individual lines have been furnished in confidence, so totals only are given, presenting a complete picture of the industry as a whole, as far as the South is concerned. They are based on reports from 24 lines operating in the South, which represent 53,630 miles of main line track, or 61 per cent of the railroad mileage in the sixteen Southern States.

The total capital and maintenance

Norfolk & Western's New \$1,600,000 Coal
Pier at Lambert Point, Va.

Can unload forty 120-ton cars an hour and
has adjoining storage yard capacity for fifty
trains of 100 cars each



Estimated Expenditures by All Southern Railroads, 1936

(87,000 Miles of Main Line Tracks, or 36 Per Cent of Country's Total)

Gross capital expenditures for additions and betterments \$75,000,000

Outlay for equipment \$35,000,000

For roadway and structural materials .. 40,000,000

Expenditures for maintenance \$453,000,000

Major items purchased:

Coal and other fuel \$61,400,000

Ties and other forest products 20,000,000

Iron and steel products 50,000,000

Miscellaneous 41,000,000

Total capital and maintenance expenditures \$528,000,000

Wages and salaries 580,000,000

Grand Total *\$1,108,000,000

*Excludes amount spent for taxes of approximately \$69,000,000, interest on borrowed money and dividend payments.

Expenditures of the 24 reporting lines totaled more than \$297,000,000 in 1936, or 10 per cent more than was spent during 1935.

Maintenance purchases of materials and supplies amounted to \$255,871,000 for 1936, about 6 per cent more than in 1935; while gross capital expenditures for additions and betterments for 1936 are estimated at \$41,341,000, or 46 per cent more than in 1935.

Southern Lines Spend \$528,000,000 for Equipment and Materials

The figures obtained show that Southern railroads will spend approximately \$528,000,000 for additions, betterments and maintenance this year.

Including a payroll of more than \$580,000,000 for 1936, Southern lines will spend more than \$1,108,000,000 which does not include an item of \$60,000,000 for taxes, or interest on borrowed money, or dividend payments. More detailed figures are given in the accompanying table "Estimated Expenditures by All Southern Lines, 1936."

\$71,000,000 to be Spent Second Half of 1936

As of July 1, this year, Southern railroads expected to spend during the remaining months of 1936 more than \$11,000,000 for equipment, \$10,000,000 for roadways and structures, and \$50,000,000 for maintenance purposes, fuel, forests products, iron and steel products, and miscellaneous items.

As many lines do not prepare definitely in advance a budget of contemplated improvements, such work being authorized from time to time as circumstances warrant, these estimates are conservative and less than the actual expenditures for the year.

Magnitude and Variety of Purchases

The tables "Railroad Program of Ex-

Railroad Program of Expenditures, 1936

(Reported by 24 Southern Lines Having 53,630 Miles of Mainline Track, or 61 Per Cent of the Railroad Mileage of the 16 Southern States)

Capital expenditures for equipment	\$19,282,317
Capital expenditures for roadway and structures	22,059,388

Gross capital expenditures for additions and betterments, 1936	\$41,341,705
--	--------------

Capital expenditures, 1935	\$28,149,590
Expenditures for maintenance of equipment	\$165,347,104
Expenditures for maintenance of roadway and structures	90,524,785

Total maintenance expenditures, 1936	\$255,871,889
Maintenance expenditures, 1935	\$241,744,847

Grand total capital and maintenance expenditures, 1936	\$297,213,594
Capital and maintenance expenditures, 1935	\$269,894,437

Capital expenditures to be made as of July 1, 1936:

For equipment	\$11,473,825
For roadway and structures	10,281,742

Total	\$21,755,567
Estimated maintenance purchases to be made as of July 1, 1936	\$50,000,000

1936 Railroad Expenditures Itemized

(Reported by 24 Southern Lines Representing 61 Per Cent of the Railroad Mileage of the 16 Southern States)

Estimated gross capital expenditures for additions and betterments

Locomotives (steam)	\$2,198,258
Locomotives (electric)	4,807
Locomotives (Diesel)	1,154,470
Buses	12,792
Trucks	16,236
Freight cars	12,215,903
Passenger cars	1,186,406
Air conditioning	2,311,144
Other equipment	182,301

Total for equipment

Additional track	\$5,615,846
Yards and sidings	2,062,653
Rails	4,103,117
Ballast	858,018
Shops and engine houses, including machinery and tools	529,568
Stations	662,471
Office buildings	40,313
Bridges, culverts	2,569,623
Signals, automatic train control telephone and telegraph	913,616
Other improvements	4,704,163

Total for roadway and structures

Estimated expenditures for purchase of fuel, materials and supplies during 1936 by 24 Southern Rail Lines

FUEL:	
Coal	\$28,029,273
Coke	35,620
Fuel oil	3,592,883
Gas	531,802
Wood	53,506
Electricity	2,506,316

Total for fuel

FOREST PRODUCTS:	
Cross ties	\$6,385,860
Switch and bridge ties	878,297
Timber and lumber	3,610,820
Other forest products (poles, posts, etc.)	165,179

Total for forest products

IRON AND STEEL PRODUCTS:	
Steel rail	\$4,952,270
Wheels, axles and tires	2,672,760
Frogs, switches, track fastening, bolts, spikes, etc.	4,291,686
Iron bridges, turn tables, structural steel, forgings, fabricated shapes and pressed steel parts	2,684,609
Flues and tubes for boilers ..	581,458
Telegraph, telephone, signal material	1,168,205
Bolts, nuts, rivets, springs, etc.	1,431,070
Locomotive and car castings, beams couplers, etc.	3,466,425
Machinery, boilers, repair parts	2,294,485
Metal and metal products	3,918,217

Total for iron and steel products

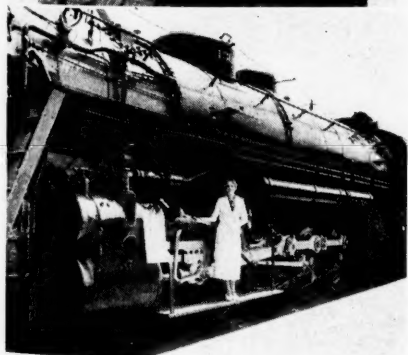
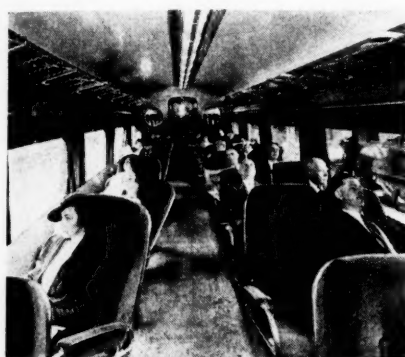
MISCELLANEOUS	
Cement	\$143,642
Lubricating oils and grease, illuminating oil	2,857,379
Ballast	1,736,279
Air brake material and appliances for locomotives	1,742,821
All electrical materials	2,203,184
Stationery and printing	2,254,617
Commissary supplies	2,258,548
Rubber and leather goods	863,316
Painters supplies and chemicals	3,648,205
Automotive equipment and supplies	265,094
Train and station supplies	1,682,910

Total for miscellaneous purchases

Grand total for maintenance purchases

*Includes items not segregated.

ating oils and grease; \$3,648,205 for painters supplies and chemicals; more than \$2,000,000 each for electrical materials, stationery and printing and



penditures, 1936" and "1936 Railroad Expenditures Itemized" give in detail the principal purchases of 24 reporting lines operating in the South. They indicate the magnitude of railroad buying power and what these purchases mean to the industries of the United States.

In the major items of capital expenditures of some of the 24 lines are about \$3,400,000 for locomotives, over \$12,000,000 for freight cars, \$1,186,000 for passenger cars, and in excess of \$2,311,000 for air conditioning.

Of the capital expenditures for roadway and structures are \$5,615,000 for additional track, over \$4,000,000 for rails, \$2,062,000 for yards and sidings, \$2,569,000 for bridges and trestles, and nearly \$1,000,000 for signals.

In maintenance purchases, the largest item is for fuel—\$35,318,000—with expenditures for coal amounting to \$28,029,000. More than \$27,461,000 is being spent for iron and steel products, with rails, switches and track fastenings leading. Under miscellaneous purchases, which include almost everything from dry goods and groceries to a highly diversified list of manufactures, more than \$2,857,000 is being expended for lubri-

Top — New experimental air-conditioned coach with individual reclining seats operated by Pennsylvania Railroad between Washington and New York

Center—A hotel on wheels—air-conditioned lounge car type used by Illinois Central System between New Orleans and Chicago

Bottom—A product of Springfield, Mo., shops —Largest and fastest freight engine in Southwest recently completed by the Frisco System, length 96 feet and weight 325 tons, and used for service out of St. Louis

commissary supplies; \$1,682,000 for train and station supplies, and \$863,000 for rubber and leather goods. The grand total of all maintenance purchases will run to more than \$97,000,000 in 1936.

One road reported authorization for improvement expenditures of more than \$1,600,000 up to July 1, while similar allotments for the corresponding period of 1935, including carry over work, amounted to only \$480,000. About \$500,000 of the 1936 amount covers reconstruction and reconditioning of bridges and trestles, about \$400,000 represents continuation of air-conditioning programs, and \$200,000 represents new grade separation work with the remainder expended for heavier new rail, extension of passing tracks, improved freight and passenger stations and purchase of railway and mechanical equipment machinery. In like manner, many other lines report special expenditures which could not be separately tabulated.

Nation's Largest Buyers

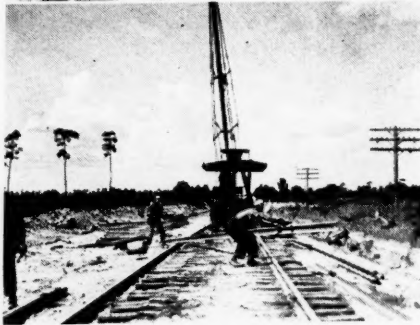
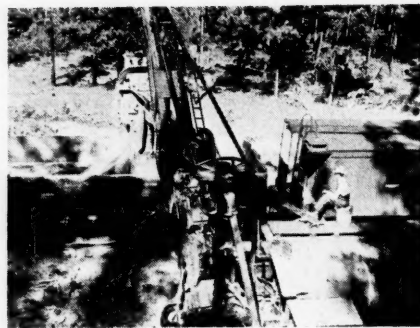
While complete figures for railroads throughout the country and outside of the South are not available for 1936, it is clearly evident that the railroads generally are staging a comeback. No single industry is making a more valiant fight despite difficulties resulting from the prolonged economic depression and hampering legislation. The chief threat to railroad betterment, in the face of improved general business, is political rather than any inherent weakness of the industry itself.

Class I railroads of the United States ordered 31,029 new freight cars in the first seven months of this year, more than in any first seven-months period since 1929.

Class I railroads in 1935 spent \$1,075,854,000 for maintenance work which was the greatest amount spent for maintenance purposes in any one year since 1931 and indications are that 1936 expenditures will surpass 1935.

Of the total outlay for maintenance in 1935, \$681,886,000 was used for the repair and maintenance of cars and locomotives owned by the railroads—an increase of \$43,981,000 above 1934, and an increase of \$83,177,000 above 1933.

Expenditures for maintenance of way



Roadway Construction Scenes Along Gulf, Mobile and Northern Railroad

and structures totaled \$393,967,000 in 1935, or an increase of \$28,667,000 above such expenditures in 1934, and an increase of \$71,681,000 above 1933.

The railroads bought \$1,427,000 tons of bituminous coal in 1935, or 22 per cent of the total bituminous output.

With net operating income of \$238,243,000 for the first six months of 1936, an increase of 22.5 per cent over the same period of last year, the railroads of the country have been buying the largest volume of equipment in six years.

Some Railroad Accomplishments

Within the past 20 years the tractive effort, or the capacity to pull, of the average steam locomotive has increased 44 per cent.

For every pound of coal consumed in freight service, the railroads of the United States in 1935 hauled 8-1/3 tons a distance of one mile, as a result of greater efficiency of locomotives, more scientific adoption of grades of coal to requirements, easier rolling freight cars, and continued improvement of roadways.

Many railroads now operate steam locomotives in passenger service a distance of 500 miles or more before replacing them with fresh locomotives, whereas some years ago they were changed each 100 or 150 miles.

Due to speeding up of freight trains, many communities throughout the United States now enjoy over-night freight service from points 500 miles distant.

Claims resulting from loss and damage to freight shipments paid by the railroads have been reduced from \$119,833,000 in 1920 to \$17,946,000 in 1935.

Out of each dollar of operating revenues received by Class I railroads in the first half of 1936, 7.9 cents went for taxes.

More than 1,600,000 children are being educated in America each year with the taxes paid by the railroads.

Operation Steadily Improves

Progress has been made in every phase of operation and costs have been generally lowered. In 1921, it cost the railroad \$10.78 to move a ton of freight one thousand miles; in 1929 it cost them \$7.44, and today it is about \$6.75.

Paying an average of 69.3 cents an hour in wages or more than the previous peak of 67.6 cents in 1920, the weekly payroll for each individual railroad worker averaged \$32.57 a week, or about 35 per cent more than the weekly wage reported by 25 different manufacturing industries.

In spite of the improvement in the (Continued on page 64)

One of Several Types of New Diesel-Electric Trains Operating in the South

This is the "Green Diamond" of the Illinois Central System which is a Diesel-powered, articulated train of five cars, accommodating 120 passengers and weighing 230 tons, about one-half of the weight of a comparable standard car train.



SOCIAL SECURITY TAXES

THE Federal Tax on payrolls to provide relief to the unemployed and the aged will impose a substantial increase in operating cost upon the Southern Lumber Industry. It is difficult to say exactly what this added burden of taxation will amount to, but a fairly close estimate is possible.

First, let us consider the law and the benefits to come from it, as well as its aims. There is merit in social security legislation, if it can relieve the financial strain of unemployment and old age disability and partially sustain consumer purchasing power during periods of economic stress. Its final aspects are alluring, but the immediate problems of tax liability and equitable administration are severe and complex and in some degree attract results the very opposite of those sought. Social security measures, patterned upon European methods that have been only mildly successful, are a rabid departure from American principles. To the extent that economic stress can be relieved without curbing initiative and the incentive to progress, there is need for a system of social security. But the human reaction to a uniform economic standard, and the difficult adjustments this will impose upon capital and labor alike, will create many interim problems which cannot be easily and equitably solved. Social retrogression might easily result from our quest for economic security. No legislation is flexible enough to correlate the social and economic functions, and the Social Security Act, if it be made to work, must conflict somehow with the principles of democracy. The ideal is praiseworthy, but seemingly impractical and inconsistent with American habits. Legislation in the general welfare is assumed to be constitutional, although the means created to achieve that end may be unconstitutional. Both aspects are involved under the Social Security Act. In the absence of a decision by the Supreme Court, taxpayers must conform to the law as written, and I will try to estimate its probable effects upon the Southern saw and planing mill industry.

Southern Saw Mill Industry

The sawmill industry of the South consists of more than 10,000 individual units manufacturing pine alone. Some 500 odd of these units each have a normal annual production of 6,000,000 ft. or more. The remaining 9,500, classified as small mills, will each produce anywhere from a few thousand feet to 6,000,000 ft. a year. No current statistics are available on other than the larger and better organized plants. The annual estimates of the U. S. Census Bureau, although they lack complete coverage, are the only authoritative data on the industry as a

Will Add to Total Operating Cost in the Southern Saw and Planing Mill Industry and Increase Price to the Consumers of Lumber by at Least \$1.00 Per 1000 Feet

By

E. L. Kurth

President Southern Pine Association



Photo Underwood & Underwood

whole. That source will be used for computing the probable effects of social security taxation.

The past seven years found the lumber industry, along with other durable goods producers, operating at greatly restricted levels. The collapse in consumer demand and the resulting low ebb of building construction imposed unusual hardships on the industry. Employment and wages declined greatly and capital suffered heavy losses. While 1935 and 1936 have brought encouraging gains over the preceding three years, the industry is still below 1930 levels and dwarfed in comparison to 1929, the last normal year. Subnormal operations of today afford no reliable basis for comparison with a future normal. In computing the effects of social security taxes, 1929 will be used as a fixed basis, applicable both to the 1936 tax and that which will result in 1949, when these taxes are at their predicted maximum levels, subject, of course, to the hazards of subsequent legislation. The cost per 1,000 feet, when computed on this basis, will represent the approximate actual increase that will take place from 1936 to 1949.

Let us take, for example, only the eleven chief Southern Pine producing states of

Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Oklahoma, Texas and Virginia and only the sawmills and planing mills in these states. In 1929, according to the U. S. Census Bureau, the saw and planing mills in these eleven states employed 234,174 persons and paid wages and salaries of \$196,693,325. Their combined production of Southern Pine and other woods totaled 15,462,485,000 bd. ft. If this be accepted as a normal condition and it be assumed that the Southern Lumber Industry, because of its tremendous reserve supplies of timber (as estimated 113,811,000,000 cubic feet of all species and classes of timber as of 1930 in the eleven states enumerated, of which quantity 67,238,000,000 cubic feet is classified as available for saw log production) will again operate on a basis equal to or better than 1929, the industry's contribution to social security would normally result about as follows:

Unemployment Insurance (Federal excise tax on employers of eight or more):

Assessed on an estimated 85% of total normal payroll, would involve some \$167,189,000. The tax would amount to \$1,671,890 in 1936, and \$5,015,670 in 1938 and years thereafter.

Old Age Benefit (Federal Tax on total payrolls involving earnings up to \$3000 per year):

Assessed on an estimated 98% of total normal payroll, would involve some \$192,760,000. The tax would amount to \$1,927,600 in 1937, and \$5,782,800 in 1949 and thereafter.

By using 1929 as a fixed normal applicable to all years, 1936 to 1949 and thereafter, it is possible to compute an estimated social security tax cost per 1,000 ft. of normal production. The normal tax on saw and planing mill employers alone in the eleven principal Southern producing states, would, on this basis, work out about as follows:

Normal production	
(1929)	15,462,485,000 ft.
1936:	
Federal Unemployment Insurance Tax	\$1,671,890.00
Cost of tax per 1,000 ft. of production108
1949 and thereafter:	
Federal Unemployment Insurance Tax	\$5,015,670.00
Old Age Benefit Tax	5,782,800.00
Total Tax	\$10,798,470.00
Cost of Tax per 1,000 ft. of production698

Estimated Cost \$17,000,000 a Year

It is seen, therefore, that the Southern
(Continued on page 64)

DIESEL POWER SERVICE

Use Quadruples in United States in Three Years

DIESEL power use quadrupled in the United States in the past three years. Approximately 1,250,000 horsepower of Diesel engines were sold in the United States in 1935 as compared with 350,000 horsepower in 1933. No total figures on installed Diesel power are available, but according to the Census of 1929, internal combustion engines installed in manufacturing in the United States aggregated 1,233,853 horsepower, about one-third being in Southern plants. In 1935, public utility power plants of the country had 459,473 horsepower in internal combustion engine installations, about one-half being in the Southern States. These installations include all types of internal combustion engines—gas, gasoline, and oil driven.

IN municipal service, communities found an economical, dependable power for water and light plants and it was in this field where the first rapid expansion in the use of stationary oil engines took place. Further refinements in design and improved construction made this type of internal combustion engine of greater use for other than municipal power plant purposes.

INDUSTRIAL groups that rely on the oil engine as the source of power are quarrying, saw mills and furniture plants, ice making, building and auxiliary industries. Industrial use of stationary Diesel power units, large and small, now is represented in practically every type of power application in the United States. In manufacturing and general industrial and utility—transportation, water and light service—Diesel installations have steadily increased in recent years. They have been an important factor in furthering the decentralization of industry in small communities and isolated districts, furnishing cheap, dependable power. Built in power ranges from the 5-horsepower lighting units and small automotive unit for truck and bus transportation, tractor and mobile construction machinery, to great stationary engines of 1,000 horsepower and over, they furnish the energy to drive Diesel-electric trains, gigantic pumps, compressors, and electric generators, and direct drive for cotton gins and small manufacturing operations throughout the country.

Refinement in Design and Broader Use of the Diesel Type of Internal Combustion Engines Mark Another Step in the Evolution of Power Since Steam First Lightened the Worker's Burden. Diesel Engine Construction Has Been Steadily Improved Since Its Initial Successful Adoption in Marine Service, Until today the Diesel Principle Offers High Efficiency and Low Cost Operation

WITH its past record of efficiency, the greater economy of operation of the Diesel design has drawn users to this form of power plant. As an illustration of the savings effected, Wm. E. Hooper & Sons Co., textile manufacturers, Baltimore, recently installed a 5-cylinder 17½x25 Diesel engine rated at 600 horsepower at 214 revolution per minute, driving a 25 cycle alternating current generator. With two other Diesel engines of the same make, it is said that these engines have paid for themselves entirely from the savings under previous power costs.

Other users of Diesel power in smaller units report very low cost operation, one of 112½ horsepower recently installed by the Aaron Mills, is pulling a 75 barrel corn and flour mill at a cost of about one-fourth of former power costs.

IN a survey of Diesel power installations in Texas cotton gins, Cotton & Cotton Oil Press, reported that of 100 cotton gins in the State having a total of 12,800 horsepower operating an average of 3½ saws per horsepower; the average age of the installations was 10.8 years; the average cost of ginning a bale of cotton for fuel and oil was 14.7 cents, and the average yearly cost of repairs and maintenance was \$24.17. The oldest engine in the group was 14 years and the youngest 5 years. The highest repair cost was \$50 for a year on a 120 horsepower and the lowest was \$10.

Comparing the size of the gin with the horsepower, the average of 3½ saws per horsepower of the engine is important as experience shows that the success of an engine depends on having it large enough to pull the load, and not less than a conservatively rated horsepower in the engine for every 3½ saws. When these engines were sold and installed, the proper type and application to meet the load conditions and a correct installation were usually made when the outfit was erected,

assuring success of the engine from the start.

The cost of fuel varies, ranging all the way from 1½ cents per gallon to as high as 12 cents per gallon. The cost of lubricating oil varied with the grade of oil bought. The survey indicated that a good high grade lubricating oil is accompanied by a low average repair cost. The average cost of 14.7 cents per bale of cotton ginned is fairly representative of the cost of ginning with this type of engine.

DIESEL power is of interest because of operating economies and especially service in isolated regions, being applicable where heavy and continuous operation is desired in individual industrial power plant installations and for automotive power requirements.

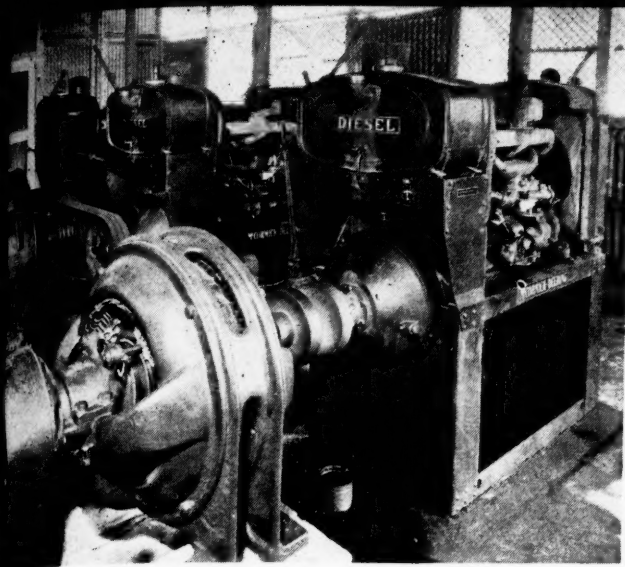
IN the small Diesel engines up to 160 horsepower, the Hercules Motors Corporation, Canton, Ohio, specializes in heavy-duty and fairly high-speed types designed primarily for use in commercial vehicles, buses and tractors and industrial locomotives; for use in industrial machinery such as hoists, shovels, cranes, compressors, and for stationary power purposes—oil well drilling, pumps, etc.

The Otto Engine Works, Philadelphia, started production in 1935 on Diesel engines in the smaller range principally for marine service, industrial machinery and individual power plants for small factories, hotels, etc. In developing its "Superior" light-weight engine, the aim has been to design a sturdy, simple and efficient unit, for the Diesel engine is primarily a long-lived engine, economical in operation and represents a distinct type of prime mover.

In the summer of 1931, the Caterpillar Tractor Co., Peoria, Ill., announced its first Diesel tractor model and thus became the first American manufacturer to drive a tractor with this type of power. Since then more than 17,000 units have been manufactured and sold.

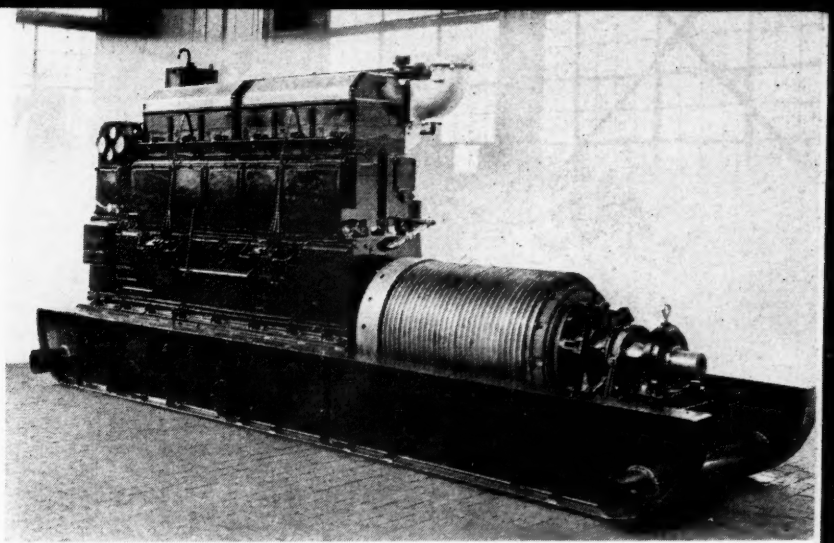
"Caterpillar" Diesels are now working in over seventy countries in the world. The majority of them are in tractors, but the sale of engines and power units has

(Continued on page 34)

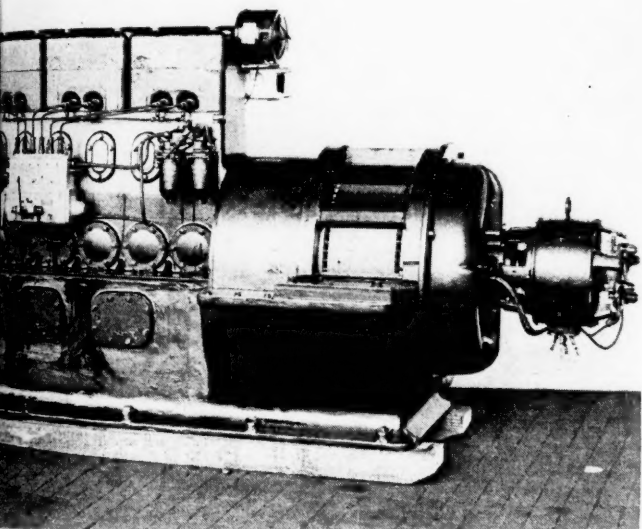


International Harvester Diesels Driving Generators in Florida Power Plant

Many light and water plants for municipal service in the South have cut operating costs through the use of Diesel engines ranging from 300 horsepower to more than 2200 horsepower

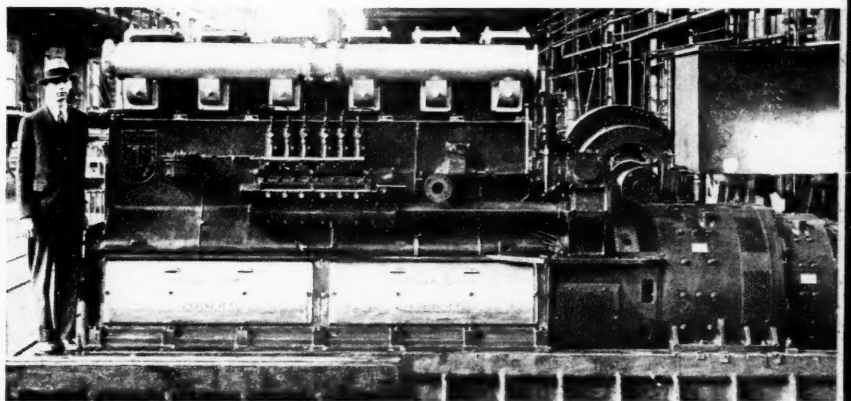


Cooper-Bessemer 240 HP Diesel with V-Belt Sheave and Clutch Mounted on Base for Rowan Drilling Co., Fort Worth, Texas



Superior 85 HP Diesel-Electric Power Unit Developed by The Otto Engine Works

Adaptability and flexibility of Diesel engines make possible cheap power for the small as well as large user in urban centers and isolated regions



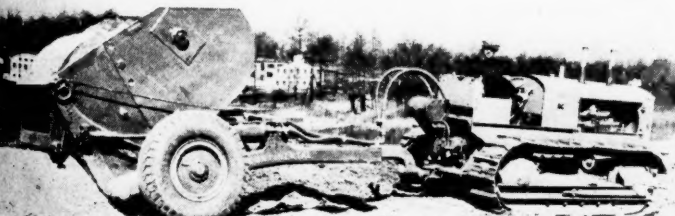
McIntosh & Seymour 660 HP Diesel Power Unit

Whether for stationary or mobile power service the Diesel engine is proving its efficiency and lower operating cost

Diesels Help Build Dams

A 200,000 yard excavation and 20,000 yard concrete job on the Appalachian Power Co's dam on the Kanawha River by Boso & Ritchie, Ravenswood, W. Va. They own 8 Caterpillar 60's, 4 Diesel 50's and a Diesel powered Lorain 77 shovel

Allis-Chalmers Diesel Fuel Burning Tractor in Heavy Construction Work



(Continued from page 32)

paralleled the rapid and sustained upswing of Diesel production as a whole. Over forty manufacturers of such equipment as excavators, industrial locomotives, compressors, crushers, gravel plants, generator sets, etc., are now using "Caterpillar" Diesels to power their products.

Many outstanding jobs throughout the South furnish some of the best performance stories that have been recorded by Diesel power installations.

On the Mississippi levees, H. N. Rodgers, who is known as the dean of levee contractors, heads four companies which own over forty "Caterpillar" Diesels. In these fleets are tractors with 10,000 to 16,000 hours of the hardest kind of work to their credit.

The Arundel Corporation, Baltimore, bought the fourth "Caterpillar" Diesel built, and put it to work on its contract at Bolling Field near Washington. This tractor has operated over 20,000 hours.

In West Virginia, Tygart and Kanawha Dams had twelve Diesels on the job.

On the Skyline Highway connecting Shenandoah and Great Smoky Mountains National Parks, Diesels found many and diversified uses. Diesel tractors pulled the wagons of the Sammons-Robertson, Waugh Bros. and Albert Bros. contracts. In most cases, the dirt was loaded into wagons by shovels powered with Diesels, and Schramm and Worthington air compressors were also driven by these engines.

Down in Florida where government engineers are carrying on a large reclamation and levee-building project around Lake Okeechobee, Diesels have been on the job from the very first, handling mud and wet sand under severe conditions.

NO discussion of Diesel power is complete without mention of the rapid progress this type of power unit has made in the efforts of the railroads to modernize, increase efficiency, and meet growing competition of other transportation agencies. Applications range from installations for propelling individual coaches to pulling entire light-weight, streamlined trains of several cars. Flexibility of service and economies of operation are obtained to a remarkable degree. In a several months' test of a three and four car air-conditioned Diesel-electric train in regular mainline service on the Gulf, Mobile & Northern Railroad, the average cost of a round trip of 1000 miles was 30½ cents per train mile of which 15 cents was for wages, 5.8 cents for air-conditioning, 1.7 cents for fuel, and the rest of the items making up the total cost were for maintenance and servicing including laundry and supplies for sleeping cars. Other railroads in the South and elsewhere in the country have been adding Diesel power equipment and making speed, service and economy records that open up a new era in railroad transportation.

So Diesel power use is expanding in all fields of service forming another step in the evolution of power since the days of the first steam engine.

Diesel Engine Installations in South in Recent Months

Location	Owner	Service	Make	Horsepower
Ala., Mobile	American Tankers Corp.	Compressor	Superior	72
Ala., Montgomery	Marshall Lumber & Mill Co.	Power	Fairbanks-Morse	120
Ark., Clinton	C. H. Tingley	Power	Witte	10
Fla., Havana	Havana Ice Co.	Generator	Buckeye	150
Fla., Marianna	Florida Public Utility Co.	Generator	Busch-Sulzer	600
Fla., Key West	Key West Electric Co.	Generator	Nordberg	600
Fla., Miami	Royal American Shows	Generator	Caterpillar	7 units 125
Fla., Moorehaven	Spadaro Contracting Co.	Generator	Superior	1 unit 750
				1 unit 405
Fla., Pensacola	Escambia Dairy Co.	Power	Witte	5
Fla., St. Cloud	City of St. Cloud	Generator	Superior	315
Fla., Stuart	Stark Electric Co.	Generator	Superior	72
Fla., Tallahassee	Havana Ice Co.	Feed Plant	Buckeye	60
Fla., Tampa	Tampa Wholesale Products Co.	Power	Witte	10
Fla., Tampa	Shell Producers Co.	Dredge	Superior	210
Fla., Vero Beach	City of Vero Beach	Generator	McIntosh & Seymour	1090
			Witte	5
Fla., Winter Haven	Edgar Melvin	Power	Witte	10
Ga., Washington	Wilkes County Co-Op. Asso.	Flour Mill	Buckeye	225
Ky., Bowling Green	Bowling Green Mfg. Co.	Dredge	Busch-Sulzer	3 units 1,700, 840, 750
Ky., Louisville	U. S. District Engineer			
Ky., Smithland	Klondike Fluorspar Corp.	Pump	Superior	260
La., Arabi	Arabi Packing Co.	Generator	Buckeye	187½
La., Hammond	C. Black Sand & Gravel Co.	Gravel Pump	Buckeye	262½
La., Crowley	A. B. Dore	Power	Fairbanks-Morse	180
La., Jonesboro	Town of Jonesboro	Municipal	Fairbanks-Morse	500
La., Lafayette	City of Lafayette	Municipal	Fairbanks-Morse	1,225
La., Lake Charles	Layne Company	Oil Well	Cooper-Bessemer	2 units 110
			Buckeye	225
La., Napoleonville	La Fourche Shrimp & Oyster Co.	Ice Plant		
La., Plaquemine	Sternberg Dredging Co. of St. Louis	Dredge	Busch-Sulzer	1000
La., Sun	Kivett & Reel, Inc.	Generator	Buckeye	262½
Md., Baltimore	Wm. E. Hooper & Sons Co.	Generator	McIntosh & Seymour	600
			Witte	5
Md., Cockeysville	C. G. Lintz	Power	Busch-Sulzer	1000
Md., Easton	City of Easton	Municipal	Buckeye	112½
Miss., Coahoma	Farmers Gin Co.	Cotton Gin	Buckeye	112½
Miss., Darling	Farmers Gin Co.	Cotton Gin	Buckeye	112½
Miss., Europa	J. B. Johnson	Power	Witte	5
Miss., Minter City	Minter City Oil Mill	Power	Fairbanks-Morse	600
Miss., Titwiler	Farmers Gin Co.	Cotton Gin	Buckeye	112½
Mo., Bismarck	Ozark Oak Flooring Co.	Generator	Buckeye	187½
Mo., Brumley	Ted Stamper	Power	Witte	10
Mo., Carthage	City of Carthage	Municipal	Nordberg	2,250
Mo., Chillicothe	John P. Milbank	Flour Mill	Buckeye	150
Mo., Columbia	Columbia Quarry Co., St. Louis	Crushing Plant	Superior	525
Mo., Gravois Mills	Williams Brothers	Power	Witte	5
Mo., Kansas City	S. H. Stevenson Auto & Elec. School	Power	Witte	5
Mo., Kansas City	McSweeney Trades School	Power	Witte	5
Mo., Kansas City	Finley Engineering School	Power	Witte	5
Mo., Kansas City	Carey Machine Works	Power	Witte	5
Mo., Mosher	St. Genevieve Lime & Quarry Co.	Quarry	Superior	750
Mo., Odessa	Odessa Ice Cream Co.	Power	Witte	5
Mo., St. Louis	Columbia Quarry Co.	Crushing Plant	Superior	380
Mo., St. Louis	Western Supplies Co.	Power	Witte	5
Mo., Salisbury	City of Salisbury	Municipal	McIntosh & Seymour	300
			De La Vergne	480
Mo., Shelby	City of Shelby	Generator	Nordberg	1,250
Mo., Sikeston	City of Sikeston	Municipal	Fairbanks-Morse	2 units each 150
N. C., Belhaven	Town of Belhaven	Municipal	McIntosh & Seymour	1 unit 730, 1 unit 445
N. C., Farmville	City of Farmville	Generator		
N. C., Reidsville	Reidsville Ice & Coal Co.	Ice Plant	Buckeye	150
N. C., Saxapaw	Sellers Mfg. Co.	Textile Mill	Superior	810
N. C., Statesville	Statesville Ice Co.	Ice Plant	Buckeye	80
N. C., Terra Ceia	H. Van Corp.	Compressor	Lis	8
N. C., Vandemere	Pamlico Sea Foods	Ice Machine	Buckeye	112½
Okla., Cushing	City of Cushing	Municipal	McIntosh & Seymour	3 units each 750
Okla., Madill	Geo. W. Donley	Power	Witte	5
Okla., Pawhuska	City of Pawhuska	Light & Power	Fulton	1000
			McIntosh & Seymour	2 units each 450
Okla., Pawnee	City of Pawnee	Generator	De La Vergne	1 unit 200, 1 unit 120
Okla., Ponca City	Continental Oil Company	Pipe Line		
Okla., Ryan	Pioneer Refiners Co.	Power	Witte	5
Okla., Shawnee	City of Shawnee	Pump	Worthington	200
S. C., Charleston	Merritt Dredging Co.	Dredge Pump	Superior	465
Tenn., St. Joseph	J. H. Richardson	Cotton Gin	Rollender	70
Tex., Beeville	Cox and Cox	Power	Witte	10
Tex., Bowie	City of Bowie	Municipal	Fairbanks-Morse	630
Tex., Bruni	Superior Oil Producing Co.	Rotary Drills	Superior	350
Tex., Crockett	American Liberty Pipe Line Co.	Pumps	Superior	260
Tex., Denton	City of Denton	Generator	De La Vergne	1000
Tex., Dodge	American Liberty Pipe Line Co.	Pumps	Superior	260
Tex., Houston	M. K. Culver	Power	Witte	2 units 5
Tex., Houston	E. Eggers	Tug	Caterpillar	125
Tex., Houston	National Supply Construction Corp.	Mfg. Plant	Superior	1 unit 350
				1 unit 350
Tex., Houston	Oil Well Supply Co.	Oil Well	Cooper-Bessemer	110
Tex., Kennedy	City of Kennedy	Municipal	Fairbanks-Morse	150
Tex., La Feria	T. E. Betts	Power	Witte	5
Tex., Lubbock	City of Lubbock	Municipal	Nordberg	1,665
Tex., Orange	Orange County Water Works	Pumps	McIntosh & Seymour	4 units each 400
				5
Tex., Rio Grande	Elsworth Moore	Power	Witte	5
Tex., Rusk	American Liberty Pipe Line Co.	Pumps	Superior	260
Tex., San Antonio	San Antonio	Generator	Rathbun	2000
Tex., Tyler	Tyler Armature Works	Power	Witte	5
Tex., Uvalde	H. A. Franke	Power	Witte	5
Tex., Waco	Moss Ice Co.	Ice Plant	Witte	10
Va., Martinsville	Aaron Mills	Flour Mill	Buckeye	112½
Va., Norfolk	Atkinson Dredging Co.	Generator	Rollender	10
Va., Woodstock	J. I. Triplett Estate	Power	Busch-Sulzer	365

Shades of NRA—

ROBINSON-PATMAN LAW

REVOLUTIONARY changes will be required in all business to meet demands of the new Robinson-Patman Anti-Price Discrimination Act. In it are many reminders of the unconstitutional NRA as well as those in other recent legislation such as the Government Contracts Act which limits employment and wages. The business world, being suddenly confronted with this new far-reaching legislation in the history of a steadily developing intervention by government in the conduct of private management, must now make many radical changes in sales practices.

One of the points in connection with the law which the Federal Trade Commission emphasized is the fact that the burden of proof in refuting charges of violations will fall upon the alleged violator.

Explanation of the Law

In explaining the Act, the following excerpts are taken from a recent statement of the Federal Trade Commission:

"The new act includes some important provisions that are in the nature of extensions of the principle of non-discrimination. These extensions are independent of the prohibition against the discriminations in price as such. The methods forbidden were evidently considered as either constituting indirect price discrimination or other forms of discrimination which had effects similar to price discrimination.

"Payment of brokerage, commission or other compensation in lieu thereof to an intermediary is forbidden, except for services rendered, where the intermediary is acting in fact for or in behalf of or is subject to the direct or indirect control of any party to the transaction other than the one paying the intermediary's compensation. Allowances for advertising and sales promotion work are declared unlawful unless they are made 'available on proportionally equal terms' to all customers who compete with one another.

"It is also declared unlawful to discriminate between purchasers of a commodity bought for resale by furnishing any services or facilities for processing, handling, selling or offering for sale that are not 'accorded to all purchasers on proportionately equal terms.' The new act specifically declares it unlawful for any person engaged in commerce 'knowingly to induce or receive a discrimination in price' that is prohibited by the amended Section. 2. The new act affirmatively protects the right of a cooperative association to distribute its earnings in proportion to the volume of dealings of its respective members.

"Section 3 of the new act also makes it a criminal offense to sell goods in any part of the United States at prices lower than elsewhere in the United States for

the purpose of destroying competition or eliminating a competitor.

"In addition to the proceedings that may be instituted to enforce compliance with, and to restrain violations of the new act, a person who is injured in his business or property by reason of violations of the new act may sue for three-fold damages and cost of suit, including a reasonable attorney's fee. This is provided for by Section 4 of the Clayton Act."

The act was evidently designed to protect the small purchaser of goods against injurious price discrimination in favor of the large buyer. But suppose a large buyer claims competitive discrimination against himself in favor of a small buyer when the cost of the small sale is demonstrably high. The large buyer might demand even larger discounts, or that the small man pay more for his goods in order to equalize the transactions. Never before has the question of standardized cost accounting become of such importance as under this new act. It opens up endless fields of litigation.

Nelson B. Gaskill, prominent Washington lawyer and for five years a member of the Federal Trade Commission, has made a 25,000 word analysis of the Robinson-Patman Law that business executives may better understand the requirements and the changes necessary to meet its peculiar and drastic provisions. The book has just been published by the Kiplinger Washington Agency.

Some of the pertinent paragraphs, which are further amplified in the book and clarified by numerous examples and treatment of every phase of the Law considered to have a more extended effect on business practices than any industrial legislation in years, are given in the following excerpts:

"It is much easier to underestimate the seriousness of the questions of policy now confronting the business executive than to overestimate it. Once a prima facie case is shown against a respondent, if he has not prepared his defenses or his justifications by a careful reconsideration of his sales policy and some pretty intensive cost accounting, he might as well throw up his hand.

Standardization of Grades and Qualities

"About the first thing management should do is to examine its catalog and price list and weed out all numbers and brands in which what is essentially the same commodity is masquerading under different names or numbers at different prices. For this is an unlawful price discrimination as between purchases of what is essentially the same commodity even in disguise.

Considered Most Drastic in Widely Extended Effect on Business of any Industrial Legislation in Years, Business Compelled to Make Many Radical Changes in Sales Practices. Burden of Proof on Violator.

"It would seem probable that this statute would emphasize quality differences as the basis of purchases and reduce the emphasis on bare price. It should stimulate simplification-standardization schedules in industries and the use of quality labels.

Excludes Trade Discounts

"The law does not include and so excludes all trade discounts, which makes a revision of many price lists necessary. It does not authorize a flat or fixed scale of quantity discounts. It looks to the elimination of all differentials between customers which cannot be justified in terms of cost resulting from different methods of selling or of quantities sold or delivered to two or more specific customers. This law makes no provision for the justification of the trade discount and therefore prohibits its use. This is wholly different from a quantity discount. If judicial research goes back so far, the only conclusion as to the legislative intent which the courts can reach is that Congress intended to exclude the trade discount and to substitute what I have called the cost-quantity discount.

Foster Consumer Cooperatives

"The classification of customers for the purpose of price or discount differentials disappears. Customers may be classified by service function only for the purpose of customer selection. Failing such selection and refusal to sell, the manufacturer must justify all price differences as between purchasers under the provisions of this law. The law points the way to the economic extinction of both the wholesaler and the retailer.

"It seems quite likely that by breaking down functional service discounts and restricting the use of cost differentials as much as possible without entirely wiping them out, the purpose to foster consumer cooperatives is manifested.

Uniform Price Differentials

"It is very evident the purpose and policy of the law is to do away with all uniform price differentials whether of the service type or the quantity type. And to require as between two purchas-

(Continued on page 66)

THE GAS INDUSTRY —

By

Alexander Forward

Managing Director,
American Gas Association

THE beginning of 1936 marked a definite upturn in the gas industry, a resumption of its more than a century of growth and expansion in this country.

Perhaps the most striking economic characteristics of the gas industry are to be found in its record of expanded construction expenditures during the early stages of the depression. This was particularly true in the field of natural gas pipe lines. Some of the major projects undertaken in this field are mentioned briefly. One of the most outstanding developments was the 1,400-mile line of the Southern Natural Gas Corporation, constructed during the years 1928 and 1929 from northeast Louisiana to Georgia, at a cost of around \$35,000,000. Another development was the 1,250-mile line constructed by the Missouri-Kansas Pipe Line Company from Texas to Indiana at a cost of more than \$37,000,000. In 1930 and 1931, the Natural Gas Pipe Line Company of America laid down a 1,000-mile line from Texas to Chicago at a cost estimated in excess of \$30,000,000.

Expansion Continued During Depression

Even with the deepening of the depression in 1931, the gas industry continued its expansion. In that year, the El Paso Natural Gas Company spent more than \$6,000,000 on construction of a 300-mile line from Texas to Arizona, while the Memphis Natural Gas Company spent over \$2,500,000 building a 100-mile line from Memphis to Jackson, Tenn.

Altogether during these years, there was constructed more than 4,000 miles of natural gas trunk transmission lines at an expenditure of nearly \$120,000,000. It is not difficult to visualize the effect that this must have had in cushioning the full brunt of the depression on the heavy industries, or the large number of people who were thus maintained in employment during those years by expansion of the gas industry.

43 Per Cent Natural Gas Users Are Located in Southern Territory

The result of the expansion has been particularly pronounced in the South. At the beginning of this period, with the exception of the great producing states



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of Texas, Louisiana, and Oklahoma, there was very little natural gas in other portions of the South. Today, however, the situation is completely changed. At the end of 1934, the entire gas industry in the United States was rendering service to some 15,722,000 customers, of which about 16 per cent, or roughly 2,500,000, are located in Southern territory. Of the total number of gas customers in the South, approximately 1,700,000 are served with natural gas. That is to say, approximately 43 per cent of all users of natural gas in the United States are located in Southern territory. There are nearly 28,000 persons employed by the gas industry in the South to serve the nearly 16,000,000 people who benefit directly from gas service. More than 75,000 miles of gas mains were in use at the end of 1934 in Southern territory, while

Present and Future

the revenues of the industry in this region aggregated \$148,000,000.

Definite Revival Under Way

The gas industry is now definitely on the upgrade. For the first four months of 1936, its revenues aggregated \$302,000,000, which was an increase of more than 10 per cent over the corresponding period of a year ago.

The gas range is another interesting index of the revival of industry in general since it is an item of modernization and replacement in the home. During the year 1935, there were sold in the United States 1,100,000 gas ranges, an increase of nearly 30 per cent over the 1934 range sales.

Research in Equipment and Processes

It has been frequently pointed out that the usefulness and vitality of an industry are expressed through the research it conducts and the developments that result from such research. The usefulness of gas is measured by the effectiveness of the appliances and equipment which the industry can offer its customers, and the recognition of this fact has led the industry to conduct an extensive research and development program. Many of these research development projects are carried on as industry efforts under the auspices of the American Gas Association with the cooperation of utilities and equipment manufacturers.

Many new industrial heating processes, as well as new and improved pieces of equipment, have been brought out and are playing an important part in manufacturing plants throughout the country.

Also, an advanced method of summer air conditioning by gas and without low temperature cooling, is now gaining favor in both manufacturing plants and for human comfort. This is the only air conditioning system which controls the humidity and temperature separately. Many experts believe a higher quality of air conditioning, both for comfort and for industrial processes, results from this complete separation of humidity and temperature control.

Conventional methods of air conditioning by means of refrigeration have not been overlooked by the gas industry. Equipment has recently been developed and placed on the market consisting of gas engine driven refrigeration and air conditioning machines built as a single unit. In large sections of the country served by natural gas, this method of air

conditioning has a bright future as the cost of operating is generally low. This same method of driving summer air conditioning machines is now applicable to cooling large commercial type refrigerators where low operating cost and general reliability have a double appeal.

What has been hailed by ceramic experts as one of the greatest advances in firing enameling furnaces since the introduction of continuous furnaces is a recent development of the gas industry. In this method, so-called gas hot tubes flood the enamel on steel and iron with intense radiant heat in such a way that the production of furnaces is not only speeded up, but the enamel itself comes out with a superior brilliancy.

Industrial Uses of Gas

Industrial gas research has pioneered in improving many pivotal industrial heating processes upon which factories depend for cheaper overall costs, greater production and finer quality of product. Such important processes as brass, copper, and steel annealing, forging, hardening, and other heat treating operations have been made with improved tools with which modern factories are progressing. Nor is this confined to the metal industries. A majority of the manufactured articles of commerce have at some point in their creation been made better, cheaper, or quicker because of the improvements made in applying gas to the needs of industry.

Entirely apart from the field of cooking, the use of gas in other domestic applications has been growing steadily. Refrigeration has made particular strides, and the progress of water heating and house heating are too well-known to require comment. The statistics at the beginning of this article have demonstrated the vitality of the gas industry in these fields.

The managers of gas companies have come to the realization that the industrial fuel market differs radically from the domestic market in that it needs a highly flexible rate schedule designed to meet constantly changing prices for the competing fuels. Those industries situated in the South and Southwest, with relatively

low priced natural gas, are fortunate indeed in having at their disposal the most valuable fuel on earth. In many cities

ONE of the outstanding characteristics of the gas industry is that in all depression periods it has been almost the last industry to feel the full brunt of economic recession. This has the corollary result that it is almost the last industry to recover from the effects of depressions. For example, the latter part of 1929 was one of disturbances, bank panic, collapse of security values and great losses by industry in general. As the depression deepened during the following year, the gas industry continued to expand both in gross sales and net profits, so that in 1930, when most industries were nearly prostrated, the gas industry enjoyed the best year in its long and useful history.

The beginnings of recovery are always accompanied by increased prices for the basic raw materials of the industry, such as coal, oil, cast-iron pipe, etc. The result is that when most other industries are beginning to signalize their emergence from the depression by pronounced increases in net profits, the gas industry lags.

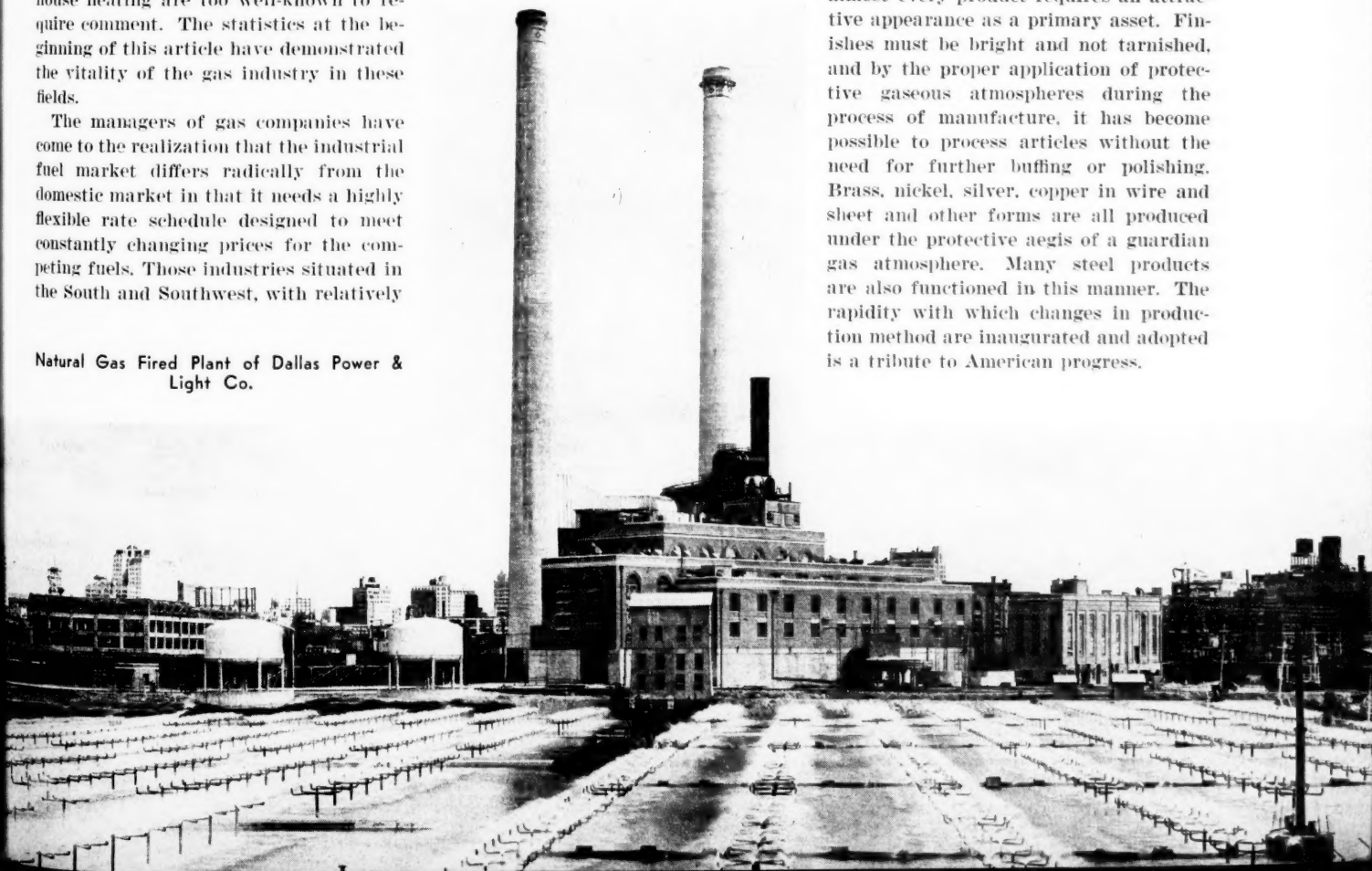
supplied with low priced natural gas throughout the South, there is no other fuel used save gas. Gas is used for cooking, refrigeration, heating, water heating, laundry drying, incineration, and other household fuel using purposes.

By-Products of Gas

Much has been written about gas as a fuel, but the picture of the industry would be incomplete if some mention were not made of gas in other aspects. It is the source, for example, of a variety of chemical products, and there is every indication that its use in this direction will be extended, for some of our greatest chemical producing organizations are spending large amounts in research and development in this field alone. It is known, for example, that the constituents of natural gas can be pulverized and hydrogenated. They can be cracked and thus made to yield a whole family of new compounds of great value to industry. Plastics, solvents, motor fuels, and other useful products can be made from gas. Such applications will be far better from the point of view of conservation of our natural resources than from the utilization of carbon black for which so many million cubic feet of gas are annually devoted. The newer processes will usher in a vastly more refined chemical utilization of a great natural resource. The Bureau of Mines, for example, has built a skeleton plant to demonstrate the value of natural gas as a reduction for zinc ores. They state that the process is economically sound and awaits only the need of capital to put it into actual operation.

Yet another method of utilizing gas is important. Modern merchandising of almost every product requires an attractive appearance as a primary asset. Finishes must be bright and not tarnished, and by the proper application of protective gaseous atmospheres during the process of manufacture, it has become possible to process articles without the need for further buffing or polishing. Brass, nickel, silver, copper in wire and sheet and other forms are all produced under the protective aegis of a guardian gas atmosphere. Many steel products are also functioned in this manner. The rapidity with which changes in production method are inaugurated and adopted is a tribute to American progress.

Natural Gas Fired Plant of Dallas Power & Light Co.



TRAILERS--

MODERN COVERED WAGONS

"Home Sweet Home" To Thousands

these homes on wheels serve as cabins in the woods, lodges in the mountains, cottages at the seashore, or as gypsy homes traversing the nations scenic highways, lined with thousands of modern trailer camps.

YES, the spirit of the American pioneer still lives.

The pioneers of the past moved on pack horses, in ox carts, prairie schooners, sailing vessels, steamboats, stage coaches and on trains, and then in motor vehicles.

Now the modern pioneer moves his home intact by putting it on rubber tires and hitching it to a motor car.

So it is that as the house trailer era is ushered in, Americans by the thousands have started migratory existence. At the beginning of 1936, it was estimated that some 300,000 American families were living in rolling homes, which, though small, include all modern facilities, being as comfortable as the modern home.

To meet the steadily increasing demand for trailer-homes, a new and important branch of the automotive industry has been created, and the manufacture of such units promises to assume major proportions.

Some 250 manufacturers are engaged in the production of land cruisers. One of the drive-away type homes sells for \$400. Larger, better equipped and more luxuriously appointed models cost up to \$1500, while custom-built palaces on wheels, boasting air-conditioning, hot-water heat, electric refrigeration and like facilities, are built to order for \$3500 and \$4000.

Hand in hand with the production of these land-going yachts, is the building of trailer-camps, already estimated to number 15,000, where sewer, electric light and power and water connections are available for a small weekly fee. Besides parking space, there are, generally, recreational facilities and "community" dining rooms. Also, some camps have public bath-houses and complete laundries for handling family washing and ironing.

The largest and most complete trailer camps are in the South, which is the most attractive mecca for nomadic Americans.

Other communities throughout the nation, notably in the West and North, with their eyes on lucrative tourist business, are providing deluxe facilities.

Some trailer camps are municipally owned. Others are owned by private individuals and operated profitably. Stores and business places are conveniently located and usually there is a public hall available for entertainments, movies, dances.

The first major group of trailer enthusiasts was composed of families forced to tighten purse-strings and by retired couples. Then came the adoption of the trailer by itinerants in the professions and trades who, of necessity, must move about from place to place to find work in their respective lines. Then salesmen, who found in such a scheme the opportunity to be with their families, and the added advantage of utilizing trailers for portable display rooms, came into the market.

Transient farm laborers—entire families of them—migrate from section to section as different crops are put in and harvested. Besides, roving preachers and evangelists—modern prototypes of the old-time circuit riders—have fitted up mobile churches, complete with altar, pulpit and organ.

Stage folk use such trailers for homes and for traveling from city to city. Movie people on location use trailers as portable dressing rooms, restaurants, offices, etc.

College students park their trailers on

the campus and live comfortably at reasonable cost during the scholastic term.

The adoption on so extensive a scale of the commodious trailer home has glorified the organization known as the Tin Can Tourists of the World. At its last annual convention in Sarasota, Florida, more than 3,000 members from practically every state in the Union, Canada, Central and South American countries attended.

For many these trailer coaches have solved the high cost of living. There is no rent to pay, license fees are comparatively low, and there is the additional advantage of being able to move on whenever the urge presents itself.

These modern covered wagons, scientifically designed for road-ability and streamlined to reduce air resistance, appeal to the housewife because of their compact interior arrangements, built-in features and general facilities.

Along with the steadily increasing number of homes that roll over the roads behind motor cars, has come a definite trend towards larger and more completely outfitted trailers, so that current models of manufacturers are virtually "efficiency apartments."

So-called "shells for commercial users" are furnished so that trailers may be equipped to carry complete, effective displays, to suit needs of individual owners who wish to display goods, exhibit power tools and to have a portable show room where they can claim undivided attention, isolated and free of interruptions, and thereby afford an economic measure of effective selling.

It is a far cry from the first two-wheeled cart, packed with camping equipment, adopted several decades ago by vacationing-folk, hunters and fishermen, and the first home-made, crudely-built trailers, to the snug, efficiently designed houses on wheels, in which families are being reared today, moving here and there as the covered wagon era is reborn in a new and modern setting.

Already the popularity of the trailer movement has been attributed to high real estate taxes. Estimates are that four out of five families owning trailers have no other home, thereby escaping high taxes and becoming nomads. An economist observes that the occupants of the trailers can avoid most of the taxation that weighs heavily on other people, and that even if they do have to pay gasoline taxes when they move, this charge is offset by being able to buy direct from the producers. Already the question is asked, what will be the effect on the tax yield if the trailer movement gains greater momentum?

SOUTH'S MOTOR VEHICLES

States	Automobiles	Trucks	Trailers
Alabama	203,687	38,989	5,586
Arkansas	167,322	40,107	9,398
District of Columbia ...	153,854	17,610	1,377
Florida	299,045	57,199	11,256
Georgia	328,017	66,079	10,823
Kentucky	304,063	43,613	*
Louisiana	209,426	50,398	9,196
Maryland	297,050	48,528	1,750
Mississippi	152,983	33,306	809
Missouri	650,550	115,819	22,550
North Carolina	398,221	57,931	29,389
Oklahoma	419,246	82,855	6,452
South Carolina	206,158	29,761	2,759
Tennessee	309,867	42,031	836
Texas	1,125,049	257,055	38,262
Virginia	325,179	60,376	3,694
West Virginia	212,312	29,305	2,189
Total South ..	5,762,029	1,079,962	156,326
United States ..	22,565,347	3,655,705	733,414

*Trailer of 1,000 pounds capacity prohibited on highways; light trailers permitted but not registered.

Building A Modern Flying Boat

AIRPLANES of the China Clipper type, built recently for Pan-American Airways, by The Glenn L. Martin Company, Baltimore, and which are now in trans-Pacific Ocean service, represent an immense expenditure for both labor and materials.

The materials come from many different sources in practically all lines of industrial activity and involve an outlay of approximately \$110,000 per airplane. This figure, of course, includes the cost of engines, propellers and accessories, as well as the wide variety of materials used in fabricating the airplane itself.

The number of man-hours per airplane obviously varies with the number of airplanes of a given model constructed at one time. In lots of three, the China Clipper ships, represented slightly less than 400,000 man-hours per airplane in direct manufacturing time.

In addition to the direct hours of labor involved, there were a little less than 200,000 man-hours of engineering time over a three-year period.

Approximately 120,000 man-hours were spent in constructing tools, jigs, and fixtures.

The above man-hours, aggregating 1,520,000 for three flying boats were exclusive of the usual overhead items and labor expenditures incidental to and chargeable against any manufacturing operation.

An idea of the wide variety of materials used in building airplanes of the China Clipper type (Martin Model No. 130) is graphically illustrated by a list of representative items as follows:

Alloy Steel— Sheets, bar, tubes, screws, bolts, etc.	Curled Horsehair for Cushions and Upholstery	Kapok for seat cushions and up- holstery	Rubber Tires for Beaching Gear
Aluminum Alloy— Sheets, bar, tubes, screws, bolts, etc.	Dzus Cowl Fasteners	Lock Washers	Radio Insulators
Aluminum Foil	Dishes	Lubrication Fittings	Rubberized fabric (mattresses)
Artificial Leather	Electrical Wiring, Cables, Ter- minals	Link Chain	Signal Pistol
Anchor (special type)	Emergency Rations	Lacing Cord	Sea Anchor
Asbestos Compound	Extension Cords and Lights (flameproof)	Life Jackets	Ship's Bell
Automatic Pilot Complete with Gyro Instruments	Electrical Bulbs, Switches, Fuses	Life Preservers	Seapack
Annunciator	Elastic Stop and Anchor Nuts	Landing Lights	Storage Batteries
Axe (hand)	Engines	Mattresses for Berths	Springs (wire coil)
Ball Bearings, sealed, self-lubri- cated	Flexible Tubing (aluminum and composition)	Nitrate Dope	Steel Cable
B. C. Sound Spray for Sound- proofing	Felt (soundproofing and heat in- sulation)	Navigating Instruments (octant, chronometer, etc.)	Sprocket Wheels
Bilge Pumps	Fasteners (Lift-the-Dot)	Oil Radiators	Synthetic Rubber Products
Boat Hook	First Aid Kits	Oil Temperature Regulator	Stainless Steel— Bolts, Sheets, Bars, etc.
Canvas	Fabric for Window Curtains, Up- holstery, Berth Curtains	Oil Pumps	Standard and Special Bolts, Ma- chine Screws, Nuts, etc.
Carburetors	Fog Horn	Plastacelle	Shatterproof glass "Plexite" and "Duplate"
Copper Tubing	Glue	Piano Hinge	Tool Kit
Cotter Pins	Generators (Electrical)	Pinked and Twilled Tape	Toilet and Lavatory Fixtures
Clevises, clevis pins	Gears and Worms	Pipe Fittings	Sheets, Pillows, Blankets (fire- proofed)
Curtain Rollers and Curtains	Hand Fire Extinguishers	Prestone for Heating System	Starters (Electrical Engine)
Copper and Steel Lockwire	Hemp Lines	Propellers (for constant speed)	Thread
CO2 Fire Extinguisher Systems	Hydraulic Turbines	Police Pistol and Ammunition	Tool Kit
Cotton Fabric, grade A	Hydraulic Pumps	Police Nightstick	Truck Type Wheels
Cork Composition Flooring	Iron and Dural Rivets	Parachute Flares	Upholstery
Conduit Fittings for Electrical System	Insulating Sheet	Plumbing Fixtures	Voltage Regulators
Composition Pulleys	Instruments (compasses, pressure gauges, thermometers, etc., 72 in all)	Paints, Enamels, Lacquers	Valves for Fuel, Oil, etc.
		Rubber Products	Whistle
		Rubber Cement	Wood Tables
		Radiator for Heating System	Zippers
		Rubber Life Rafts	
		Running and Anchor Lights	

A Flying Boat Tries Its Wings

Baltimore Built Clipper Ship Of The Air Designed For Trans-Pacific Service



WANTED: Markets For Charcoal

By

Frank J. Hallauer,

Principal Engineer,
Forest Service, U. S. Dept. of Agriculture

A STUDY of the hardwood distillation industry, made as a part of a careful inventory of the nation's timber resources and requirements being conducted by the United States Forest Service, indicates that the markets for charcoal will very likely determine whether the industry is to expand or contract.¹

Although hardwood distillation is not a large industry when compared with the lumber and paper industries, it is important from the standpoint both of industrial employment and of utilization of wood that otherwise might be wasted.

Prior to 1930, 1¼ million cords of wood were consumed annually in hardwood distillation. This would mean the continuous employment of 8,000 men, and perhaps the actual employment of 10,000 men.

The industry also furnishes a market for cull trees that would have no other industrial use, for woods waste that might otherwise be a fire hazard, and for sawmill waste, which can be converted into valuable products.

In some localities it provides the only opportunity for part-time industrial employment, or the only cash market for timber from farm wood lots. The new plant at Crossett, Ark., built primarily for the purpose of using sawmill waste, is buying large quantities of wood cut by farmers. In 1934, 400 out of the 1,300 farmers within a radius of 25 miles of the plant received money for cutting and hauling wood either from company forests or from their own land.

Hardwood distillation has been built up on three products, charcoal, methanol, and acetate of lime or acetic acid.² A cord of wood yields about 48 bushels of charcoal, 815 gallons of pure methanol, and 200 pounds of acetate or 114 pounds of acetic acid. This proportion remains fairly uniform regardless of the markets. Obviously, since production of the three products goes on simultaneously the market trend of any one may determine the production, and hence the market condition, of the other two. An expansion in production of acetate because of some abnormal demand, as for war purposes, might mean overproduction of charcoal for which there is no market. Under normal conditions, if a company can sell 10,000 bushels of charcoal it will process hardwood enough to make the charcoal whether or not there is an immediate market for the accompanying chemical products. On the other hand, a demand for wood chemicals may not stimulate production in the distillation industry appreciably unless there is also a market for the charcoal necessarily manufactured at the same time. The difference lies in the fact that the chemicals can be stored, whereas charcoal is too bulky for storage, and also that the trend of consumption for chemical products has been increasing, while for charcoal it has been declining. There is always the expectation that the demand will catch up with an expended production of chemicals, but not so with charcoal.

¹ Made by Dr. M. H. Haertel of the Forest Service.
² Until recently acetic acid was always obtained by conversion from acetate of lime, but some plants are now making acetic acid directly, avoiding the intermediate step.

The future of the hardwood distillation industry is, therefore, directly dependent upon charcoal markets, old and new. Peak production of charcoal was 41 million bushels in 1929, of which roughly one-third was used as blast-furnace fuel in the manufacture of charcoal iron, one-third as domestic fuel, and one-third in the manufacture of chemicals and in miscellaneous metallurgical operations. Analysis of these markets should indicate where efforts at expansion would be most fruitful.

Apparently little can be done about consumption of charcoal as blast-furnace fuel, which previous to 1929 took even more than one-third of all charcoal. It is controlled entirely by the production of charcoal iron, which has been declining steadily for 50 years. Production averaged a half million tons annually during the decade 1920 to 1929. Recent trends are shown by a decline in furnace capacity from 320,000 tons per year in 1925 to 166,000 tons in 1929; in the same period charcoal consumption as furnace fuel dropped from 20 million to 13 million bushels. Production of charcoal iron will not pass out of the picture; perhaps it has reached the bottom, but in any case the producer of charcoal can do nothing to stimulate this market.

The domestic fuel market for charcoal includes household and institutional uses, use in dining-car grills, hotels, and restaurants. Total consumption in this market has been rather stable, although

this has probably not been true for each class of user in the group. In many homes of poor people charcoal is the primary fuel, and this is the largest single item in the domestic fuel market for charcoal. Part of this market in New York and other large cities has been lost as houses for the poorer people have been equipped for other fuels, but some of this loss has been offset by increased use elsewhere. Increased use by railroads, hotels, and in better-class homes has been brought about by briquetting of charcoal and aggressive salesmanship on the part of a few large organizations. The fact that sales promotion has been effective in part of the domestic field, and that experience has demonstrated the advantages of charcoal where more modern fuels are not available, may show the way for further expansion of the domestic fuel market.

The entire South is a prospective field for expanding the domestic market for charcoal. In the Southwest there is a large area where charcoal would appear to be the logical household fuel but is now little used. In the Southeast it has long been used but never to the extent that it might be, particularly in smaller communities, if properly exploited. This may be a field for sales promotion.

Another prospect is in connection with picnic grounds and camp sites. Much of the pleasure attached to camping centers around camp cooking. No fuel is better adapted for this than charcoal, and only a small proportion of campers now appreciate its advantages.

The third market group is about equally divided between the chemical and the metallurgical uses, with promising prospects in the chemical field. Charcoal is used as a raw material or reagent in a number of chemical industries. It is a constituent of black powder, of stock and poultry feeds, and of such carbon products as electrodes, brushes, etc. It is used to absorb vapors, and is a clarifying agent. But the most recent and important use is in a form known as "activated charcoal," which is employed as a deodorizing and decolorizing agent in the treatment of municipal water supplies. The first practical application of this was in 1929; since then some 500 water plants in the United States and Canada have adopted the treatment.

The analysis is of interest to the South from two angles. The hardwood distillation industry has, from the beginning, been associated with northern hardwood resources and northern markets. The new plant at Crossett, Ark., is the only one south of Tennessee. The development of a domestic market for charcoal in the South and Southwest might logically be the basis of a hardwood distillation industry for the South. It would provide an outlet for several Southern species which now have no market. Production of chemicals would be a further step in the development of the chemical industry, or, where there is a local market only for the charcoal, chemical products could be profitably shipped to other markets. The South's situation as regards climate, labor, and raw material is very favorable for the establishment of this industry there.

More Treated Lumber

Preservative treatment was given to 179,438,970 cubic feet of wood during 1935, an increase of 24,333,247 cubic feet, or approximately 16 per cent, as compared with 1934.

Of this amount, 111,345,929 cubic feet, or 62 per cent, were cross ties and switch ties. The railway industry maintained its status last year as the principal consumer of treated timber.

The report, which was prepared by R. K. Helphenstine, Jr., U. S. Forest Service, in cooperation with the American Wood-Preservers' Association, points out that 58 per cent of all cross ties treated in 1935 were impregnated with creosote; 36 per cent were treated with creosote-petroleum mixtures; 6 per cent with zinc chloride; and less than one-half of 1 per cent with miscellaneous preservatives.



Just After Launching

The Princess Anne's unusual lines are seen in this photograph.

Streamlined Bay Ferryboat

Automobile-Passenger Transport Operating on Norfolk-Cape Charles Run

THE first streamlined ferryboat to be placed in operation in Southern waters is the Princess Anne, automobile-passenger transport, built at the Sun Shipbuilding & Dry Dock Co. plant at Chester, Pa.

It operates on the Little Creek (Norfolk)-Cape Charles route of the Virginia Ferry Corp.

The Princess Anne is 200 feet long, and has accommodations for from 60 to 80 automobiles and trucks with luxurious passenger spaces on the upper decks. Its appointments include a promenade deck, lounge, ladies' salon, dance floor, dining room and solarium. The ship is so designed that vehicles may be loaded and unloaded from both bow and stern.

The vessel, with twin screws and twin rudders, is of unique design, in that it is built entirely on modern streamlined principles, including all superstructures, smokestack and mast.

This vessel is of fireproof construction throughout, all divisional bulkheads and doors in quarters being of metal. It is designed to maintain a speed of 18-miles an hour.

The propelling machinery, built by the Skinner Engine Co., of Erie, Pa., consists of two 4-cylinder Uniflow engines of 19-inch bore and 20-inch stroke, operating at 275-pounds steam pressure. Steam is supplied by two Foster-Wheeler watertube boilers of 3,800 square feet heating surface, equipped with interdeck superheaters and arranged for burning oil under induced draft.

A complete CO₂ fire extinguishing system is fitted up in the boiler room. Heating and ventilating throughout is accomplished by motor-driven fans giving positive circulation of fresh air throughout the vessel. A complete change of air will occur every 5-minutes in quarters and every minute in galley and lunch counter. The heating is accomplished by four steam-heated Carrier Brunswick "Aero-fin" heaters.

General equipment includes:

A Lidgerwood steam steering engine
CO₂ marine fire extinguishing system
CO₂ fire hose reel system
Lonergan chime whistle

The propelling machinery includes:

Ingersoll-Rand condenser, capable of condensing 35,000 pounds of steam per hour
Steam jet ejector unit of Ingersoll-Rand design
Warren single stage double suction centrifugal pumps
Soot blowers of Diamond Power Specialty Corp. design
Fuel oil burning equipment by Todd Combustion Equipment, Inc.
Dean Bros. horizontal duplex fuel oil service pumps
Westinghouse geared-turbine generator sets (2) for power and lighting purposes
Main condensing circulating pump of Warren type, driven by Westinghouse reduction gear steam turbine
Two feed pumps made by Warren Steam Pump Co.
Fire and bilge pumps of Worthington Pump & Machinery Corp. design
Cochrane Corp. conical strainerless filters (2)
Permutit straight shell water softener
Schutte & Koerting lubricating oil pumps, driven by Westinghouse double-end motors
Sharpless Specialty Co. super-centrifuge for purifying lubricating oil
Wesco all-bronze sanitary pump, bronze fitted fresh water pump, and hot water circulating pump
Taco instant water heater
Davis improved Paracoil feed water heater
Pneumator tank gauge
Buffalo Forge Co. induced draft fan
Henschel mechanical telegraph transmitters, indicator, etc.
Ferguson & Son solid manganese bronze 4-blade propellers with shafts mounted on Goodrich cutless rubber bushings.

Two Southern Chemurgic Conferences In October

Regional Meetings at Lafayette, La., and Pensacola, Fla., Sponsored by Prominent Organizations in Southeast and Gulf States

THREE regional Chemurgic conferences, covering a wide field of agricultural-industrial crops, have been announced as part of the fall program of the Farm Chemurgic Council, Dearborn, Mich. Two of the conferences are to be held in the South.

The first of the series of sectional meetings is to be held at Lafayette, La., Oc-

tober 15-17. Known as the "Southern Chemurgic Conference," topics featured will include, sugar, rice, cotton, naval stores, soy beans, and tung oil. This conference has been organized by the chambers of commerce of Beaumont, Tex., and Lafayette, La., with the Farm Chemurgic Council and the Chemical Foundation co-operating.

The second Southern meeting is to be held the following week, October 20-21, at Pensacola, Fla., under the title "Gulf Coast Chemurgic Conference," which is to cover a variety of chemical subjects. Naval stores and the Southern paper industry will be featured the first day, with Dr. Charles H. Herty, inventor of the

process by which newsprint and white paper are made from Southern pine, as well as other authorities participating in the program. Dr. C. C. Concannon, chief of the Chemical Division, Bureau of Foreign and Domestic Commerce, among others, will discuss questions relating to the development of the American tung oil industry. J. C. Adderly, president of the American Tung Oil Association of Pensacola, Fla., is directing the organization of the Gulf Coast Conference with the Chemical Foundation and the Farm Chemurgic Council assisting.

A Northwest conference is scheduled to be held at Hotel Davenport, Spokane, Wash., November 12-13.

\$70,965,000 NEW CONSTRUCTION IN AUGUST

**Total Contracts Let in the South for the First Eight Months of
This Year Are in Excess of \$577,000,000 Which Is Within
\$40,000,000 of the Twelve Months Total in 1935
and More Than Reported in 1934, 1933 and 1932**

ENGINEERING and general construction contracts awarded in the South during August amounted to \$70,965,000, with more than \$122,000,000 of new work planned and proposed. Including August, the aggregate lettings for the year are in excess of \$577,000,000. This total is within \$40,000,000 of the \$617,000,000 valuation for the entire year 1935 and surpasses the totals for any year since 1931.

The high level of new construction being maintained during 1936 and the \$122,000,000 reported for proposed and planned work during August indicate a continuation of building activity for the rest of the year.

During only one month in the eight this year did awards fall below the \$60,000,000 mark. A slump in the industrial awards in May was largely responsible for the smaller total in that month. An impressive amount of proposed work forecasts a resumption of industrial activity, which except for this respite has occupied a prominent position almost uninterruptedly since June of last year.

Highway construction awards of \$22,414,000 in August headed the list of projects as classified by the MANUFACTURERS RECORD. Industrial contracts almost paralleled that amount with a figure of \$21,933,000.

Governmental lettings in the South, Federal, State, and smaller political units dropped sharply from \$13,701,000 in July to \$7,370,000 in August. Proposed work is valued at somewhat over twice this latter amount.

Industrial Awards Second Highest of Year

Industrial awards for August top figures for all but one of the preceding months of this year. Widely differing operations of expanding Southern industry were represented in the almost twenty-two million figure for the month. Many undertakings of a smaller size, but important in their respective com-

munities, went to swell the total.

Most important among the industrial projects is the announcement that the International Paper & Power Co., through its subsidiary, the Southern Kraft Corporation, which operates plants at Mobile, Ala., and Panama City, Fla., will proceed with construction of a huge plant somewhere in the South. Two locations are now in consideration. It is reported that a kraft paper mill is proposed for location on the Houston (Texas) ship channel where the Champion Paper & Fibre Co. is now erecting a large plant. Construction is starting at Catlettsburg, Ky., on a \$2,000,000 plant for the Carbide & Carbon Chemical Corp. The plant will condense natural gas for shipment in liquid form to the company's chemical division at South Charleston, W. Va. Another important project was the \$2,000,000 program announced by the Tennessee Coal, Iron & Railroad Company for rebuilding a 73 battery coke oven unit at its Fairfield works near Birmingham, Ala. This company is resuming operation of its red ore mines.

The Stonecutter Mills, at Spindale, N. C., are about to launch a \$100,000 extension of their finishing department. The Hampton Spinning Co., at York, S. C., is adding 10,000 spindles to its present capacity. Within a month, it is expected that the \$2,500,000 addition to the Tubize-Chatillon Corporation's rayon plant will be under way at Rome, Ga. Maury & Young, Memphis contractors, are to build a \$100,000 cooling plant for the Memphis Packing Corp., continuing the expansion which has been under way in the meat packing industry in the past several months. Over \$500,000 is estimated as the cost of an underground garage proposed at Kansas City. At Orlando, Fla., Dr. P. Phillips, Inc., is erecting a \$100,000 citrus packing plant. The Southern Cotton Oil Co. is interested in a proposal to erect a \$150,000 cotton oil mill at Harlingen, Tex.

Notable Activity in Petroleum Industry Construction

Activity in modernizing and increasing the facilities for production of oils and motor fuels was especially notable. The \$1,500,000 project of the Shell Petroleum Corp. for constructing a combination crude oil and cracking unit at Houston, Tex., stood out in this field. Arthur G. McKee & Co., Cleveland engineering and construction firm, received this award. Mattison-Wallack & Co., Oklahoma City, has the commission to construct a \$300,000 gasoline absorption plant in the Redessa field of Louisiana for the Coltexo Corp. of Monroe.

Residential Building

Residential construction has maintained its pace. In August awards were \$5,851,000. While this figure is a decided decrease from the July total of \$12,623,000, it is actually an indication that private interests are carrying out a program which, in view of changed economic conditions, rivals activity of peak years, as the July awards included valuations of a number of large housing projects sponsored by the Government.

SOUTHERN CONSTRUCTION ACTIVITY

	— August, 1936 —		— January-August, 1936 —	
	Contracts awarded	Contracts to be awarded	Contracts awarded	Contracts to be awarded
General Building				
Apartments and Hotels	\$2,084,000	\$1,261,000	\$18,586,000	\$15,576,000
Association and Fraternal	295,000	118,000	765,000	2,658,000
Bank and Office	330,000	560,000	3,393,000	2,883,000
Churches	431,000	5,820,000	2,308,000	10,790,000
Dwellings	5,851,000	6,106,000	38,988,000	21,471,000
Stores	2,960,000	2,699,000	12,007,000	14,541,000
	\$11,951,000	\$16,564,000	\$76,047,000	\$67,919,000
Public Buildings				
City, County, Govern- ment and State	\$7,370,000	\$17,496,000	\$84,422,000	\$145,372,000
Schools	1,811,000	5,559,000	38,507,000	58,976,000
	\$9,181,000	\$23,055,000	\$122,929,000	\$204,348,000
Roads, Streets and Paving	\$22,414,000	\$31,414,000	\$164,008,000	\$239,628,000
Industrial and Engineering Projects				
Drainage, Dredging and Irrigation	\$1,735,000	\$14,703,000	\$14,236,000	\$105,322,000
Filling Stations, Garages, etc.	516,000	476,000	3,407,000	4,606,000
Industrial Plants	21,933,000	26,834,000	158,881,000	295,066,000
Levees, Revetments, Sea- walls, Dikes, etc.	1,489,000	1,321,000	11,161,000	14,644,000
Sewers, Drainage and Waterworks	1,746,000	7,849,000	26,795,000	60,197,000
	\$27,419,000	\$51,183,000	\$214,480,000	\$479,835,000
Totals	\$70,965,000	\$122,216,000	\$577,464,000	\$991,730,000



A New "Oregon Trail"

Coos Bay Bridge, North Bend, Oregon.
Total length of main steelwork, 1708 feet.
Length of anchor arm spans, 457½ feet.
Length of center span, 793 feet.
Clearance under suspended span, 152 feet.
Conde Bascom McCullough, Engineer.

There is a wide span from the Oregon Trail and Covered Wagon of the early pioneers to the new Oregon Coastal Highway which invites and intrigues the Motorist of today. But it is the same spirit to push forward and to build.

The Coos Bay Bridge is the longest and most important link in this new highway. The main steelwork for the 1708-foot span was fabricated and shipped from our Memphis plant.

We build big bridges and big buildings but you can be sure of no less careful attention and handling of your smallest requirement in steel construction.

The two anchor arm spans were erected first, followed by the suspended span in the middle.



VIRGINIA BRIDGE COMPANY

Roanoke	Birmingham	Memphis	Atlanta
New York	Charlotte	Dallas	El Paso
Plants at Roanoke, Birmingham, Memphis.			

VIRGINIA BRIDGE

S T E E L S T R U C T U R E S

SEPTEMBER NINETEEN THIRTY-SIX

Representative Projects In The South Last Month

Proposed Construction

Ala., Birmingham—Tennessee Coal, Iron & Railroad Co. Coke oven reconstruction	\$2,000,000
Ala., Birmingham—J. J. Newberry Co. Store improvements	150,000
Ala., Tuscaloosa—City City hall and jail	300,000
Ark., El Dorado—Lion Oil Refining Co. Lubricating oil plant; J. J. Allison and Associates, Archts. and Engrs., El Dorado	150,000
D. C., Washington—Treasury Dept. Government Printing Office warehouse	5,885,000
Fla., Hollywood—U. S. Engineer Dredging	285,000
Fla., Miami Beach—Charles H. Bohn Resident; Schoeppl & Southwell, Archts.	135,000
Fla., Miami Beach—George B. Golden Market building; Gordon E. Mayer, Archt., Miami	110,000
Fla., Miami Beach—Normandy Plaza Hotel Corp. Hotel; L. Murray Dixon, Archt., Miami Beach	100,000
Fla., St. Petersburg—William E. Glenney Dwelling construction; Hadley, Norstrom & Atkinson, Archts.	2,000,000
Fla., Tallahassee—State of Florida Capitol building additions	250,000
Ga., Atlanta—Fulton County High school; Daniel & Beutell, Archts. and Robert F. Fiske, Engr., Atlanta	100,000
Ga., Atlanta—Armand May Stores; E. C. Seiz, Archt., Atlanta	100,000
Ga., Sea Island Beach—Cloister Hotel Hotel; Francis L. Abreu, Archt., Brunswick	100,000
Ky., Catlettsburg—Carbide & Carbon Chemicals Corp. Gas condensation plant	2,000,000
Ky., Uniontown—J. E. Wathen Distilling Co. Distillery	150,000
La., Alexandria—Rapides Parish Courthouse and jail; C. E. Barron and C. T. Roberts, Archts., Alexandria	500,000
La., Plaquemine—City Sewers; L. J. Voorhies, Engr., Baton Rouge	245,000
La., Ponchatoula—Tangipahoa Parish School; Favrot & Reed, Archt., New Orleans	100,000
Md., Baltimore—Catholic Diocese Cathedral; Frederick Vernon Murphy, Archt., Washington	5,000,000
Md., Towson—Baltimore County Water sewer work; Samuel A. Green, Chief Engr.	1,018,000
Miss., Jackson—City Stadium; N. W. Overstreet & Town, Archts., Jackson ...	350,000
Mo., Kansas City—City Underground garage; Wight & Wight, Archts., Kansas City	500,000
Mo., Nevada—State Building Commission Hospital buildings; Marcel Bouliacault and G. F. A. Brueggeman, Archts., St. Louis, Mo.	340,000
N. C., Greensboro—Forest Avenue Baptist Church Church expansion	125,000
N. C., Raleigh—Wake County Schools; Wm. H. Deltrick and Frank B. Simpson, Archts.	151,000
N. C., Spindale—Stonecutter Mills Textile plant extension	100,000
Okla., Oklahoma City—City Water mains	130,000
Okla., Sapulpa—Board of Education Schools; Walter T. Vahlberg, Archt., Oklahoma City	200,000
Okla., Tulsa—St. John's Hospital Hospital building; A. M. Atkinson, Archt.	200,000
Tenn., Chattanooga—City of Chattanooga and Hamilton County Hospital; Schmidt, Garden & Erickson, Archts., Chicago	545,000
Tenn., East Tennessee Light & Power Co. Extensions	250,000
Tenn., Memphis—City Electric distribution system	2,500,000
Tex., Austin—Lower Colorado River Authority Construction of dam	2,000,000
Tex., Corpus Christi—Corpus Christi Refining Corp. Refinery expansions	400,000
Tex., Corpus Christi—Potter Pipe Line Co. Gasoline plant	250,000
Tex., Dallas—Freeman W. Burford Gasoline line	1,500,000
Tex., Electra—Waggoner Refining Co. Modernization program	100,000
Tex., Harlingen—Southern Cotton Oil Co. Cotton oil mill	150,000
Tex., Houston—Mrs. Mellie Esperson Office building annex	450,000
Tex., Houston—Queen Cleaners & Dyers Cleaning plant; R. E. Skrabanek, Archt., Houston	100,000
Tex., Hughes—Lower Colorado River Authority Marshall Ford dam	5,000,000
Tex., San Angelo—Texas Wool Scouring Corp. Wool scouring mill	125,000
Tex., Terrell—State Board of Control Psychopathic building; Theodore S. Maffitt, Archt., Palestine	118,000
Tex., Wickett—Gulf Refining Co. Gasoline plant	476,000
Va., Langley Field — National Advisory Committee for Aeronautics Wind tunnel and basin extensions	650,000
W. Va., Charleston—City Auditorium, market house	390,000
W. Va., Logan—Logan County Schools	176,000
W. Va., Spencer—Roane County Schools; Frampton & Bowers, Archts., Huntington	700,000

Contracts Awarded

Ala., Decatur—Morgan County School construction; P. S. Duckworth Co., Collman	\$135,000
Ala., Moulton—Lawrence County Court house; J. W. Chambers, Contr., Athens	110,000
D. C., Washington—David Lynn, Archt. of Capitol Air-conditioning, old House office building; Mehring & Hansen, Washington, low bidder	597,000
D. C., Washington—David Lynn, Archt. of Capitol Air-conditioning, Capitol building; Carrier Engineering Co., low bidder	601,000
D. C., Washington—David Lynn, Archt. of Capitol Air-conditioning, Senate office building; Raisler Heating Co., low bidder, New York	594,000
D. C., Washington—David Lynn, Archt. of Capitol Elevator work, Library of Congress; ABC Elevator Co., New York, Contrs.	111,000
D. C., Washington—David Lynn, Archt. of Capitol Air-conditioning, new House office building; Riggs, Distler Co., low bidder, Baltimore	507,000
D. C., Washington—District Commissioners Police Court's building; Consolidated Engineering Co., Inc., Baltimore, low bidder	1,237,000
D. C., Washington—Housing Division, FERC Housing development, superstructure; J. Slotnik Co., Boston, low bidder	1,523,000
Fla., Jacksonville—U. S. Engineer Dredging; Atlantic Gulf & Pacific Dredging Co., Contrs., New York	1,153,000
Fla.—U. S. Engineers Intracoastal canal construction; Sternberg Dredging Co., St. Louis, Mo., and Shell Producers Co., Tampa, Contrs.	1,348,000
Fla.—U. S. Engineers Dredging Lakeworth inlet; Arundel Corporation, Baltimore, Contr.	201,000
Ky., Louisville—Housing Division FERC College court housing project; Coath & Goss, Inc., low bidders, Chicago	562,000
Ky., Louisville—Kentucky Public Elevator Co. Grain storage facilities; James Stewart Corp., Contrs., Chicago	200,000
La., New Orleans—Federal Land Bank Office building addition; Gervais F. Favrot, Contr.	231,000
La., Rodessa—Coltex Corp. Gasoline plant; Mattison-Wallack & Co., Contrs., Oklahoma City, Okla.	300,000
La., Shreveport—Centenary College Physical education building; Werner Co., Inc., Contrs.	125,000
Md., Glendale—District Commissioners Tuberculosis Sanatorium; Jeffress-Dyer Inc., low bidder, Washington	132,000
Mo., Fulton—State Building Commission Psychiatric clinic and hospital; Simon Construction Co., Columbia	295,000
Mo., Jefferson Barracks—Veterans Administration Recreation building; J. S. Alberici, low bidder, So. Louis	126,000
Mo., Jefferson City—State Building Commission Penitentiary hospital and dormitory; E. C. Childers Construction Co., Kansas City, Contrs.	286,000
Mo., Jefferson City—State Building Commission Penitentiary buildings; Boyle-Pryor Construction Co., Kansas City, Contrs.	1,991,000
Mo., Kansas City—City Underground service garage; Swenson Construction Co., Contr.	103,000
Mo., Saverton—U. S. Engineer Construction of dam; Massman Construction Co., Kansas City, low bidder	2,111,000
Mo., St. Joseph—State Building Commission Infirmary; J. E. Dunn Construction Co., Contrs., Kansas City	399,000
Mo., St. Louis—Board of Public Service Civil court's building; Kellerman Contracting Co., Contr.	200,000
Mo., St. Louis—City Sanitary sewers—R. C. Micotto Construction Co., low bidder	120,000
N. C., Raleigh—Edenton Street M. E. Church Sunday School building; J. A. Jones Construction Co., Contr., Charlotte	121,000
Okla., Enid—City Waterworks; Asplund Construction Co., Contrs.	109,000
Okla., Tahleah—Department of Interior Indian Hospital; S. Patti Construction Co., and Manhattan Construction Co., Muskogee, low bidder	857,000
Tenn., Knoxville—Tennessee Valley Authority Turbines; Allis-Chalmers Manufacturing Co., Contrs., Milwaukee	937,000
Tenn., Memphis—Housing Division FERC Lauderdale Courts housing project; T. L. James & Co., Contr., Ruston, La.	2,190,000
Tenn., Memphis—Memphis Packing Corp. Cooler plant; Maury & Young, Contrs.	100,000
Tex., Austin—University of Texas and American Legion Memorial building; J. E. Morgan & Sons, Contr., El Paso	165,000
Tex., Dallas—Gilsonite Construction Co., So. Louis, Mo. Apartment building; Marion F. Fooshee and James B. Cheek, Archts.	1,250,000
Tex., Dallas—Methodist Publishing House Store building; W. C. Henger, Contr., Dallas	300,000
Tex., Fort Worth—Treasury Department Narcotic Farm building; E. L. Martin, Contr., Dallas ..	1,066,000
Tex., Galveston—State Board of Control Psychopathic hospital; J. E. Morgan & Sons, Contrs., El Paso	100,000
Tex., Houston—Shell Petroleum Corp. Oil unit and cracking plant; Arthur G. McKee & Co., Contr., Cleveland, Ohio	1,500,000
Va., Richmond—Treasury Department Parcel post building addition; Virginia Engineering Co., low bidder, Newport News	147,000



"31 YEARS AGO

... I BOUGHT MY
FIRST MARION "SAYS

Capt. W.W. Boxley

W. W. BOXLEY SONS & COMPANY
ROANOKE, VIRGINIA

"I'll never forget it. It was our first really big job—12 miles of construction for the N. & W. Railway, including three tunnels between Naugatuck and Crum, West Virginia. The Marion we bought was a Type 60. Since then we have owned twenty Marions. Last year when we secured the contract for 8.2 miles of the N. & W. extension in Buchanan County, Virginia, we purchased our first Diesel machine—a Marion Type 361 shovel. Not being familiar with Diesel operated excavating equipment, we 'banked' on the faith we had in Marion's word. Needless to say, our new Marion machine has measured up to every claim made for it. To date it has handled over 360,000 cubic yards of hard, mountainous digging without the slightest difficulty or delay."

MARION

CLUTCH TYPE EXCAVATORS
MACHINE FOR EVERY MATERIAL HANDLING JOB

WRITE FOR BULLETIN DESCRIBING MARION FEATURES
THE MARION STEAM SHOVEL COMPANY
MARION, OHIO, U. S. A.

The Marion Type 361 Clutch Type Excavator—equipped with a 1-1/2 cu. yd. dipper, and owned by W. W. Boxley Sons & Company, Roanoke, Virginia. The Buchanan County, Virginia, contract calls for the handling of approximately 500,000 cu. yd. of material. " " " "



IRON, STEEL AND METAL MARKET

WITH operations at about 72 per cent of capacity, the highest point in six years, the iron and steel industry during August continued its upward march. At the end of July it was 71.5 per cent and only 47.9 per cent a year ago. The rate in August was obtained despite a decline in automobile production as preparations are being made by the automotive industry for new models. As the customary summer slump in the steel industry did not materialize this year, expectations are for further improvement during September.

Steel Employment Highest in History

It is significant that organized labor has been attempting to unionize the steel industry at a time when employment in the steel mills of the country is at the highest level in the history of the industry. According to the American Iron and Steel Institute, the total employment in June, when operations were 70 per cent of capacity, was 498,000 persons, or 82,000 more wage earners and salaried employees were on the payrolls of the steel industry than a year ago. Wage earners were 8 per cent above the 1929 total when operations exceeded 91 per cent of capacity.

The industry's pay rolls in June also established a new high record of \$63,000,000; a gain of \$20,000,000 or 47 per cent compared with a year ago. Since June, 1933, wage rates have increased nearly 20 cents an hour, or over 41 per cent.

General Business Outlook Favorable to Steel Industry

Well maintained manufacturing activity in all parts of the country, together with increase in general construction and revival of buying by railroads, shipbuilding, and other heavy goods industries, promise greater demand for iron and steel. At least 100 locomotives are expected to be ordered in the next few months in addition to other equipment for rolling stock and roadway improvements. Further gains in hardware sales during the first half of the year, amounting to 15.8 per cent, have reflected the general rise in residential and other building construction. Tool orders have been increasing with prices rising, being about 10 per cent higher than a year ago. Steel plate mills are behind in orders and as August closed buying started for the

new 1937 automobile models, with makers of automobile parts and accessories placing orders for hot and cold strip.

Steel Construction at Peak

Continued increase in construction activity throughout the country in August enabled the construction steel industry to maintain recovery peak operations reached in July. New business booked during July was the largest in volume for any month since the beginning of the depression, according to the American Institute of Steel Construction. The bookings of 188,053 tons in July, gave a tonnage equal to 80.4 per cent of the 1928-1931 average. For the seven months of the current year the booking of 938,724 tons were 57.3 per cent of the 1928-1931 average.

Shipments of fabricated structural steel of 147,824 tons also established a record for the year, the volume for July amounting to 63.2 per cent of normal. Total shipments for the first seven months of this year were 825,238 tons.

Pig Iron Production Gains 37 Per Cent in Half-Year

Pig iron production during the first six months of this year totaled 13,367,785 tons, of which 2,061,000 tons were produced in the South. This is a gain of 37.6 per cent for the country and 32.4 per cent for the South over the corresponding period of 1935. Ingot output in the South during August was above 60 per cent of capacity. In the Wheeling district steel ingot production has been over 71 per cent of capacity. Steel plants in the Pittsburgh district have been operating at 74 per cent of capacity, equaling ingot production in the Youngstown and Chicago area. The increased activity necessary to meet demand has resulted in deferring recent plans for scrapping some mills. Since 1918, 203 furnaces have been dismantled and only 20 built. It is estimated that \$25,000,000 is required to recondition furnaces.

Scrap prices have increased, reaching \$16.50 and \$16.75 a ton at Pittsburgh. Some makers expect prices to go to \$19 a ton this fall.

Activity in the South

The red ore mines of the Tennessee Coal, Iron & Railroad Company resumed operations on August 19, after being idle since June. President J. L. Perry states there is practically a full force of men at work. The mine crews are working on an incentive wage system whereby their wages are determined by the tonnage of ore mined. Their prevailing day wage is guaranteed against adverse conditions that are beyond their control and

it is expected that they will be able to substantially increase their earnings.

Plans were announced for the rebuilding of a battery of 73 coke ovens at the TCI Fairfield works at an estimated cost of \$2,000,000. The new ovens will have a daily capacity of 1,100 tons which will give the company a total of 290 ovens with a total capacity of 4,200 tons a day.

Rebuilding of the Leeds, Ala., Universal-Atlas Cement Company's mill at a cost of \$1,500,000 will afford increased output.

Steel operations in the Birmingham district during August were reported at 64 per cent of capacity.

Plate mills have been running at full speed with structural steel operations gaining momentum.

The Kansas City Southern, Shreveport, La., is reported to soon spend \$5,000,000 for 10 locomotives and 1,000 freight cars. Many of its dining and pullman cars are to be air-conditioned. The St. Louis Southwestern Railway ordered 500 tons of rails and the Mobile & Ohio 700 tons. The Central of Georgia has ordered 200 steel hopper cars, the Southern Pacific 500 box cars, and 125 cars for the Birmingham & Southern are to be completed before the end of the year by the Tennessee Coal, Iron & Railroad Co. and the Pullman Car & Standard Manufacturing Co. Following completion of 1800 steel hopper cars for the Clinchfield & Ohio, the Huntington, W. Va., plant of American Car & Foundry Co., will construct 300 hoppers for the Cambria & Indiana Railroad.

The Chicago Bridge & Iron Co., Virginia Bridge Co., and Ingalls Iron Works, among other fabricators in the Birmingham area, report steady activity.

At Anniston, the Anniston Soil Pipe Company's plant was reopened, after two years shut down, giving employment to 150 men. The Central Foundry Co. also resumed the manufacture of pipe fittings.

Stove foundries at Rome, Ga., are busy as are those at Birmingham, Gadsden, Chattanooga, Nashville, and Cleveland, Tenn.

Steel Industry Expansions

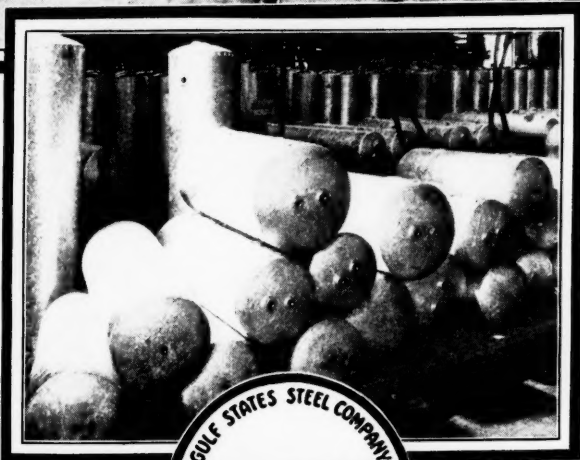
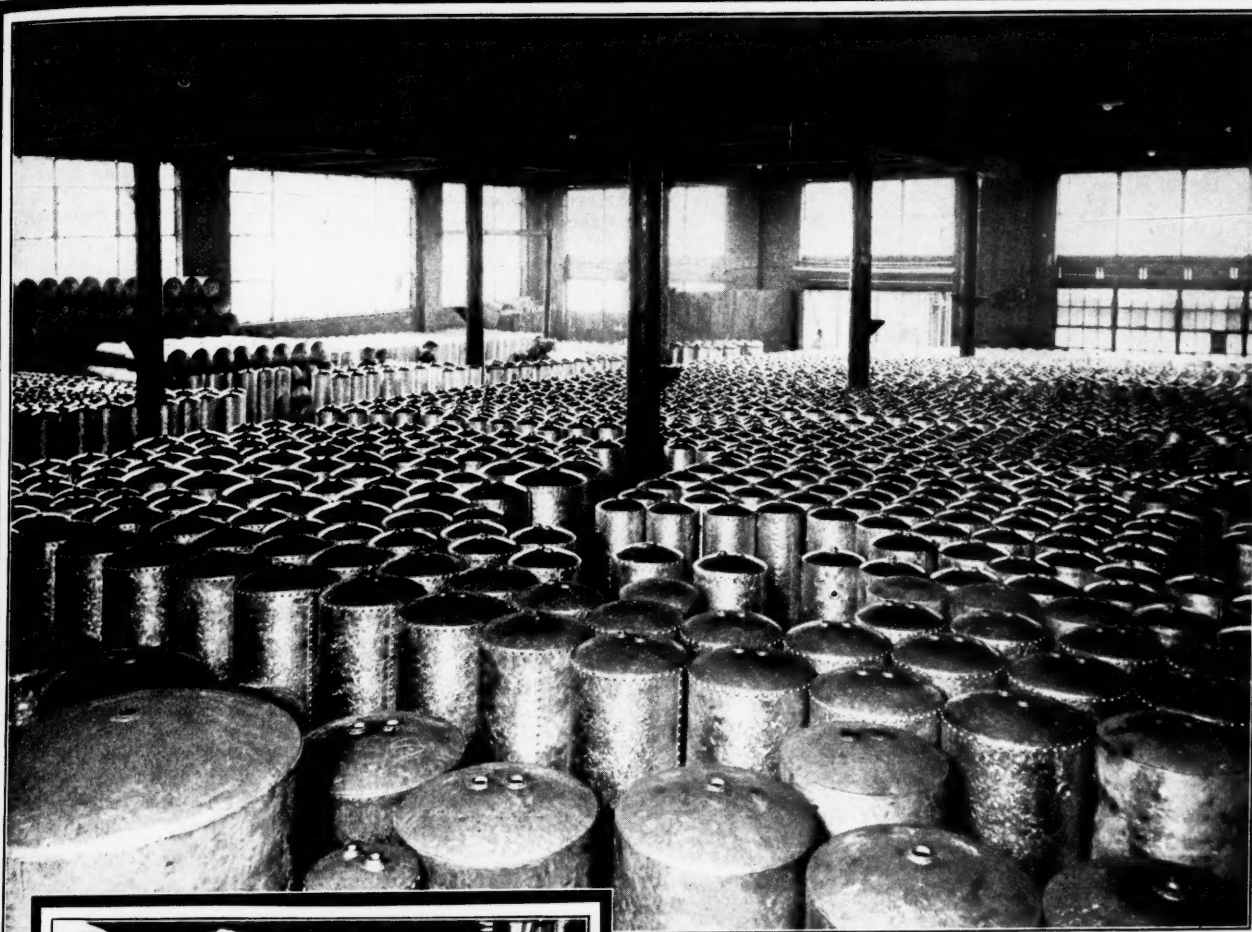
The Bethlehem Steel Corporation, with large operations in the South, registered with the SEC the issuance of \$55,000,000 of 3½ per cent consolidated mortgage 30-year sinking fund bonds. Approximately \$20,000,000 of the proceeds are to be spent by the company to provide improvements and additional finishing facilities and furnaces at some of its steel plants and possibly acquisition of new property, while \$14,682,000 will be used to redeem six outstanding security issues.

Jones & Laughlin recently sold a bond issue to provide funds for a sheet mill.

The Republic Steel Corporation has approximately \$3,000,000 for the construction of additions to its strip tin plate mill at Niles, O. It recently let a con-

(Continued on page 78)

"Tanks ♪ A Million"



The impressive array of welded and riveted range oilers shown in these photographs were all fabricated from GULFSTEEL hot-rolled sheets . . . Successful, profitable fabrication of this type requires a sheet not only of accurate gauge and dimensions, and of good forming and welding properties—but of absolute UNIFORM QUALITY as well . . . More and more fabricators are finding that GULFSTEEL is one sheet that meets these specifications. Gulf States Steel Company, Birmingham, Alabama.

GULFSTEEL SHEETS

GOOD ROADS AND MOTOR TRANSPORT

Highway Convention at New Orleans

1937 Convention and Exhibit of the American Road Builders' Association to be Held for First Time in South Week of January 11

WITH the highway program for the current fiscal year involving an expenditure of more than \$1,000,000,000, and with the great progress in road building in the Southern States, it is fitting that the South has been selected as the meeting place for the national convention of road builders, engineers and highway officials of the country. Last year Southern highway expenditures amounted to more than \$349,000,000 and with its total road mileage of 1,141,662, had under State control more than 261,502 miles of which 154,750 miles were surfaced and 40,969 miles were of high type construction.

The 1937 Convention and Exhibit of the American Road Builders' Association will be held in New Orleans, La., during the week of January 11, according to Charles M. Upham, engineer-director of the Association. This will be the first time the Association has held its convention in the South.

The 1937 program will be drafted with the convention as the central feature of the national highway conclave. No effort will be made to hold a heavy-equipment road show, but booths will be available to manufacturers of equipment and producers of materials who desire to exhibit models and literature.

The convention program, as drafted by a special Committee designated to determine subjects and speakers, gives assurance that the range of highway topics and the qualifications of speakers will set a new record at the New Orleans meeting.

Col. Willard T. Chevalier, president of the Association, said:

"The New Orleans Convention must supply all of the information that road builders desire in connection with highway administration, financing, engineering, construction, and maintenance. Also, it is necessary that the Convention serve as a clearing-house for the latest information on highway safety and other allied subjects that are an integral part of highway transportation."

Congress has authorized Federal-aid through the fiscal year 1939, thus providing an orderly construction program for the next three years. One of the new items that will enter into the two-year program beginning next year is the authorization made by Congress for Federal-aid for secondary and farm-to-market roads.

National Road Conference 14,225 Miles Of Road Completed In Missouri

Large Attendance Expected at Tulsa Meeting

ROAD contractors, chemists and engineers, and representatives of the U. S. Bureau of Public Roads and State Highway departments, and delegates from all parts of the country are expected to attend the Fifth Annual National Road Oil and Asphalt Congress to be held at Tulsa, Okla., October 8-9. The Congress, under the direction of Emby Kaye of the Skelly Oil Company, will feature new road building machinery and other developments fostering construction economies.

Survey Highways In 36 States

Highway Conditions, Traffic Density, and Finance To Be Studied

RURAL highway surveys or road planning programs are in progress or soon will begin in 36 states. These road studies are being undertaken under the guidance of Federal Highway Officials to supply the necessary information to place future highway improvements on a sound and business-like basis and enable construction programs to be carried out with a maximum of economy and saving to taxpayers.

The U. S. Bureau of Public Roads has pointed out that in the past attention has been centered chiefly on improving main highways, whereas, more attention in the future must be devoted to improving secondary and feeder roads as well as conditions at points where the main highways pour their traffic into cities.

Each survey consists of three parts, namely, a highway condition survey, a highway traffic survey and a highway finance study.

The condition survey consists of a complete road inventory in the state, showing the mileage, types, width of right of way, character of grades, sight distance, curvatures, grade crossings, sidewalks, and kinds and character of thoroughfares. Plotting of regular bus and truck routes, aviation landing fields, railroads, navigable waterways, bridges over major streams, ferries together with information on location of dwellings, stores, factories, churches, schools, mines, and oil fields.

The traffic survey shows the character and extent of traffic on all types of roads in the state and this information with the condition survey will indicate the road improvements needed.

The financial and use surveys cover the costs and revenues of the highways of the state, including a study of gasoline taxes and other special fees, and diversions, the yield of the various taxes and who pays them and the share paid by rural and urban residents respectively. It will also include all other state and local revenues available for road purposes.

IMPROVED highways are slowly spreading throughout the country. More roads, better and wider roads are being constructed. The requirements of only a few years ago have been found woefully inadequate for modern traffic demands.

Some 16 years ago, Missouri was one of the states sorely in need of good roads. The real start was made in 1920 when a \$60,000,000 bond issue was voted with the expectation of building between \$7,000 and \$8,000 of hard-surface highways.

Today, Missouri has completed or under contract a total of 14,225 miles of highway, or twice the goal of 16 years ago. Missouri now has 3,751 miles of concrete paving, 7,681 miles of gravel, 1,700 miles of oil mat, 729 miles of graded earth and 355 miles of bituminous surfacing. Its farm-to-market road system completed consists of more than 6,000 miles.

Safer Night Driving

Installation of Sodium Lighting Systems Aids Movement of Automotive Traffic

MANY states are now utilizing the high efficiency and illuminating qualities of the new type sodium lighting system for highways, thoroughfares, bridges, tunnels, and other locations where it is necessary to move traffic speedily at night. The largest of these installations to date is that being made on the San Francisco-Oakland bridge where strings of sodium luminaries totaling about 15 miles in length will soon be placed in service.

In order to facilitate the movement of automotive traffic in a locality where severe fogs are prevalent, the Washington State Department of Highways last fall installed a sodium lighting system on a section of the Pacific highway extending south of Tacoma to Lakeview. Sixty-six units, using 10,000-lumen sodium lamps developed by General Electric engineers, are in operation.

L. V. Murrow, Director of Highways of Washington, in commenting recently on the installation said:

"The construction of this experimental section of highway lighting was made primarily to relieve the conditions, experienced by the heavy fogs encountered along this section of highway. And the results which have been obtained prove that the lights are not only effective in fog but are extremely beneficial and helpful for night driving under ordinary conditions."

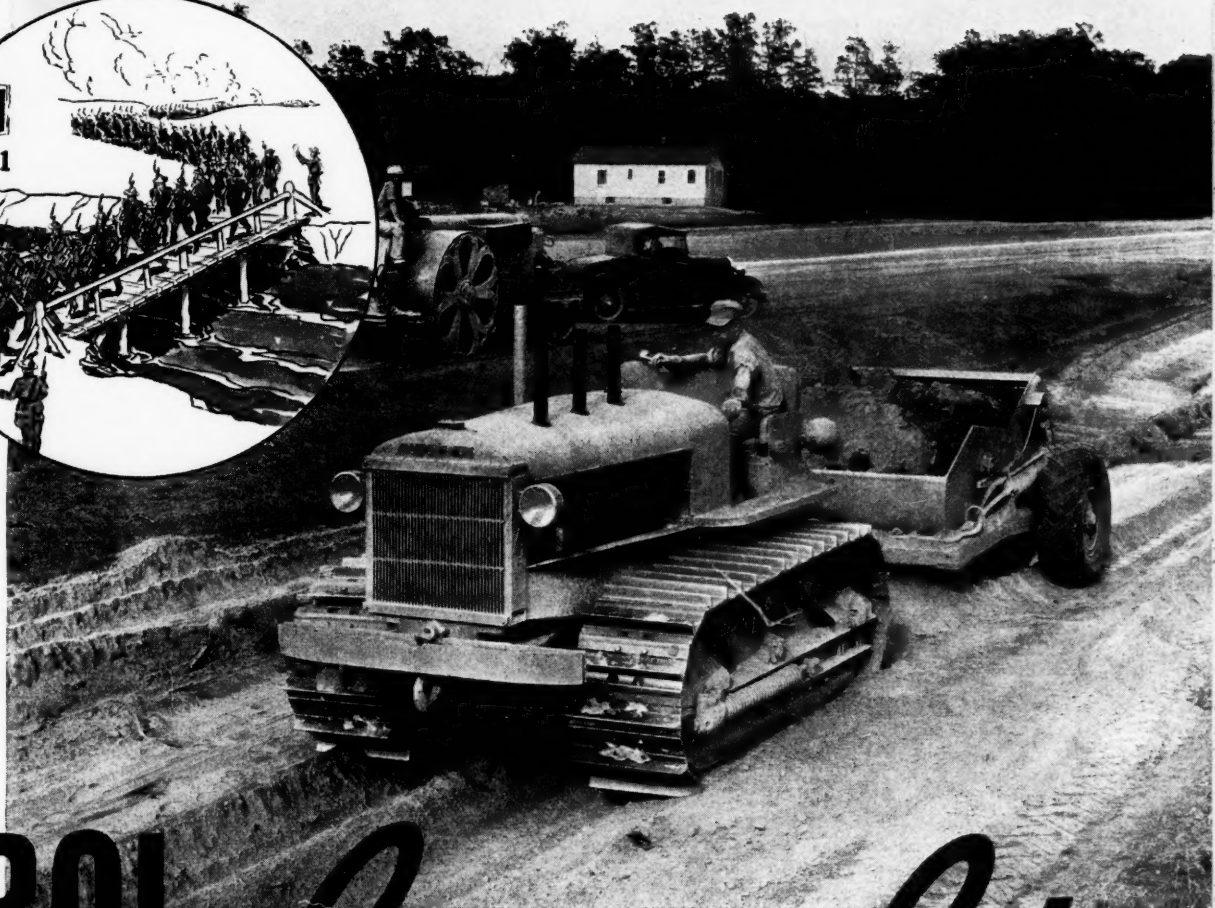
"Since the section of Pacific highway which is lighted is newly constructed, comparative figures on the number of accidents before and after lighting are not available."

VIBRATION

TRACTOR ENEMY NO. 1

It is a universal law that marching soldiers must break step while crossing a bridge — to avoid the destructive effects of VIBRATION. Unless controlled — vibration can be just as destructive in tractors.

CONTROL MAKES THE DIFFERENCE



CONTROL

CONTROLLED Instant STARTING
CONTROLLED INJECTION OF FUEL
CONTROLLED AIR-FUEL RATIO
CONTROLLED IGNITION

MEANS

longer life

It is only natural that Controlled Ignition, with its low compression pressures and freedom from destructive vibrations, should mean longer tractor life. A typical owner reported that after 7,000 hours of heavy work — in severe dust, 22 hours a day — he had not even replaced the original sleeves and pistons of his first Model "K-O." In a large logging camp — under the most abusive type of work — a fleet of Model "L-O's" worked 3,500 hours and still had their original pistons, sleeves, rings, valves, steering clutches, master clutches, brake bands, main and connecting rod bearings.

Control makes the difference! Controlled Ignition enables Allis-Chalmers Oil Tractors to burn any good grade of low cost Diesel fuel oil . . . without excessive stress and strain on metals and working parts. There is no need for heavy, unbalanced construction, special high pressure bearings, high tension rings, heat reservoirs in the combustion chamber or special lubricating oil. Investigate this IMPROVED method of burning low cost Diesel fuel.



14 TO 21 HOURS PER DAY. In the construction of a new two-lane highway on U. S. 30 across northern Indiana, the Controlled Ignition Oil Tractors of J. C. O'Connor work 14 to 21 hours a day. Above is one of the Model "L-O's" with 7-yard Continental Scraper. Below is a Model "K-O" leveling the grade.

ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

Controlled Ignition

OIL TRACTORS

EQUIPMENT

NEW AND IMPROVED

Air-Cooled Compressors

Worthington Pump and Machinery Corporation, Harrison, N. J., announces its latest development in three and six-cylinder vertical-angle two-stage air-cooled compressors, a line of compact, self-contained units with capacities ranging from 142 to 445 cubic feet per minute. The three-cylinder unit has two low-pressure cylinders set opposite each other at an angle, with a high-pressure cylinder set vertically between them. Set up in the same manner, the six-cylinder unit has two cylinders side by side in each position. The units may be had with Worthington Multi-V-Drive, direct connected to the motor through a flexible coupling, or with the motor mounted directly on the end of the crankshaft.

Armco Galvanized Paintgrip Sheets

After years of development work, the Research Department of The American Rolling Mill Company, Middletown, Ohio, announces the successful production of Armco Galvanized Paintgrip Sheets, a new kind of galvanized sheet metal that may be painted without special treatment of the surface. They are said to have all the value of full coated galvanized sheets, with the added protection of a special insulating coating. The sheets are supplied in two surface finishes—regular and extra-smooth.

Car-Spotter Saves Time and Labor

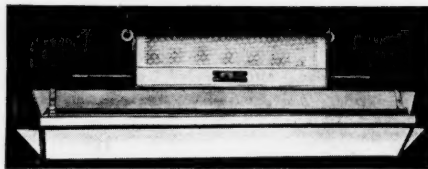
Fridy Hoist & Machinery Co., of Mountville, Pa., has developed a vertical capstan car-puller, by which railroad cars may be moved by the yard man at a saving of time and labor. In the junior type, with a rating of 7½ and 10 h. p., a total haul of 250 tons may be handled on a slight grade at slow rope speed, while the heavy duty unit, in 15 and 20-h. p. sizes, will handle a load of 350 to 500 tons. Both types are provided with extra large size vertical capstans which largely eliminate the slipping of the manila rope when handling heavy hauls in wet and freezing weather. Designed for installation in the open, the spotters have all operating parts protected by a cast iron housing, the equipment being mounted on a steel sub-base for installing on a concrete foundation.



Saves Time and Labor in Car Spotting

"Combination" Lighting Makes For Better Sight

In a new "combination" lighting unit introduced by General Electric Vapor Lamp Company, Hoboken, N. J., a number of improvements have been made to more effectively utilize the principle of combining mercury vapor light and incandescent light for the production of a cool, color-corrected light which is said to be unusually well adapted to difficult seeing tasks. The mercury vapor light source is a straight 33-inch Cooper-Hewitt tube, 1-inch in diameter, mounted horizontally beneath a new reflector of Alzac aluminum. The incandescent light sources are four 150-watt Mazda lamps located in a horizontal plane above the mercury tube.



New Combination Light Unit

An outstanding feature of the new lamp from the sight-saving standpoint is its large light-source area and low intrinsic brightness. The new unit is expected to have valuable application in textile and printing plant work, instrument and jewelry manufacture, and industrial inspection such as that of paper, molded plastics, etc.

New Brazing Alloy Increases Applications

Improvements and refinements in manufacturing Phos-Copper brazing alloy, increasing its field of application, is announced by Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. The new processes include annealing and pickling to insure freedom of any carbonaceous deposit on the surface which might interfere with the production of leak-proof joints. This makes the new alloy particularly adaptable to refrigerator parts where leak-proof joints are a necessity. Phos-Copper is available in many sizes and shapes and is applicable to all kinds of copper and copper alloy joints where strength, or gas and liquid tight joints are required. It is applied essentially as soft solder, except it requires a higher temperature.

Out-Of-Step Relay

General Electric Company, Schenectady, N. Y., announces a new relay to prevent continued operation of synchronous machines out of synchronism with their connected system, or to function to separate large interconnected systems at a specific location in the event of an out-of-step or unstable condition between the sources of power on both sides of this location. The relay consists of an instantaneous overcurrent unit, a single-phase power-directional unit, an auxiliary unit to increase operating speed, a notching

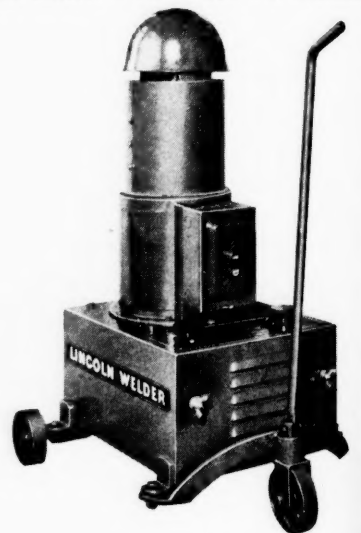
device, and a time-delay element for resetting the notching device, all mounted in a standard 5½-by-16-inch universal case. A capacitor and register for the notching unit are mounted externally. The device operates on an overcurrent and power-directional principle.

Back-Geared "Flea Power" Motor

The Speedway Manufacturing Co., Cicero, Ill., manufacturers of electric tools and motors, announces a new "flea power" worm drive, back-geared motor, made in A. C., D. C., and Universal, which may be assembled with drive shaft to right, to left, up or down. This feature simplifies mounting problems and will eliminate the need for complex and angular drives. Other features of the unit are unusual quietness resulting from an improved worm on the primary reduction and straight, wide-faced, cut steel gears on the final reduction; novelty of all matched end castings, one of which carries all reduction gears that fit evenly to the motor case, and wide range of selected speeds on the final shaft, etc.

Welding Machine Features Insulation

Designated as the "SA-150," with a rated current range of 45 to 200 amperes and intended for a wide variety of applications, a new motor-driven, single operator type arc welder has been developed by The Lincoln Electric Company, Cleveland, Ohio, for general fabrication and repair work. The utility of the new welder is claimed to be further broadened by the fact that, at proper points, the machine is insulated with class B insulation. It has dual control of voltage and current, allowing independent adjustment of arc heat and arc penetration to suit the welding application. Power is supplied by a "Line-Weld" 7½-horsepower A.C. motor available for 60 cycle power circuits of 220 or 440 volts, three or two phase. Either stationary or portable models of the welder are available.





WIDE OPEN SPACES

*near Washington and Baltimore
made available for appropriate new
FACTORIES or BRANCH PLANTS*

"DECENTRALIZATION and RELOCATION"

In an analysis of the Robinson-Patman Law, Nelson B. Gaskill, for five years member of Federal Trade Commission, says:—

"It seems to me that this is a very possible meaning of this law. And if this is true there will follow from this law a revolutionary decentralization and relocation of industry. Mass production in highly specialized centers will give way to series of small factories."

Industrial engineers and builders are specializing in problems, the outcome of new conditions under which industries must operate and which, in many instances, require decentralization and relocation of industries.

They are planning new plant buildings of advanced design and efficiency that can be built at low cost and in a short time.

We have an interesting story regarding the advantages of factory location at Glenburnie, Md. Make application with full details including the approximate number of employees and families requiring homes as, for a limited time, we will donate a few suitable tracts to appropriate high-grade enterprises. Correspondence invited.

THE GLENBURNIE DEVELOPMENT COMPANY

George B. Furman, President

1409 L Street, N.W., Washington, D. C.

SEPTEMBER NINETEEN THIRTY-SIX

51

LUMBER NEWS

OF THE MONTH

National Lumber Demand and Supply

Gain in Lumber Consumption Second Quarter
Slightly Above Seasonal Level

LUMBER stocks of the nation on July 1, 1936, were approximately 7,000,000,000 feet, or 1 per cent in excess of stocks on April 1, 1936, and 3.2 per cent above January 1, according to the Special Lumber Survey Committee's report to the Department of Commerce. The July 1 stocks show a reduction of 230,000,000 feet from January 1 of which about 130,000,000 feet is seasonal. It is believed the present volume of stocks is not excessive as the gain in lumber consumption in the second quarter of this year was slightly above the usual seasonal increase and the third quarter will probably hold to the same level. With the outlook favorable for an increasing lumber demand, the danger is rather in the continuing though moderate current excess of production over sales in important species.

Steps to Improve Competitive Position

Improvement of product in manufacture, seasoning, grading and grade-marking; fireproofing and other research; small house design and prefabrication are enumerated by the Committee as current steps which should be encouraged, to improve the competitive position of lumber and timber products. This position may be advanced by extensions of publicity and sales helps to establish the advantages of wood use

Lumber Consumption, 1929-1936.

	1st Six Months (board feet)	Total for Year (board feet)
1929	18,823,000,000	35,807,000,000
1930	14,739,000,000	26,498,000,000
1931	10,270,000,000	19,070,000,000
1932	6,780,000,000	13,105,000,000
1933	6,968,000,000	15,148,000,000
1934	7,814,000,000	15,467,000,000
1935	8,615,000,000	18,235,000,000
1936	10,873,000,000	

Lumber Consumption and Stocks, by Regions, First Six Months 1936

	Consumption Six Months (Board Feet)	Stocks July 1, 1936 (Board Feet)
Softwood Regions		
Southern Pine	3,690,000,000	1,550,000,000
Douglas Fir	3,206,000,000	1,199,000,000
Western Pine	1,833,000,000	1,532,000,000
Redwood	228,000,000	278,000,000
Southern Cypress	116,000,000	198,000,000
Minnesota	71,000,000	62,000,000
Wisconsin and Michigan	129,000,000	239,000,000
Eastern	314,000,000	127,000,000
Total softwoods	*9,103,000,000	*5,215,000,000
Hardwood Regions		
Southern	995,000,000	917,000,000
Appalachian	314,000,000	386,000,000
Northern	196,000,000	322,000,000
North Central	80,000,000	60,000,000
North Eastern	128,000,000	126,000,000
Total hardwoods	*1,770,000,000	*1,827,000,000
Grand total	*10,873,000,000	*7,060,000,000

*Includes unclassified lumber.

and of research in improved design and scientific adaptation to more extended industrial uses.

Average Wholesale Lumber Price

The average wholesale lumber price at the mills, as reported by the Bureau of Labor Statistics, was indexed at 82.1 in June, 1936, compared with 83 in May; 81.6 in June, 1935 and 86.3 in June, 1934. This is in relation to 1926 as 100. For the past two years, the range in the lumber price index has been between 79.8 and 83.2 (April, 1935). The trend was slightly downward from September to December, 1935, then upward to April. May and June showed a slight recession.

Lumber Production and Demand

Much of the statistical gain in the current ratio of demand and supply, which the industry made the first quarter of the year, was lost during the second quarter. In the first quarter reported shipments were 6 per cent above production; in the second quarter, 1.9 per cent below. In the first quarter new orders were 11 per cent above output; in the second quarter, they were 6.5 per cent below. The net result was an excess of 1 per cent in shipments and sales over production in the first six months of the year.

Hardwood manufacturers are reporting the best summer business in years, due largely to demand for furniture lumber. Increased demand for oak flooring was encouraging. Railroad equipment orders have been greater than since 1930.

Lumber Exports and Imports

Exports of lumber and sawn timber in the first half of 1936 of 667,988,000 feet, were heaviest of any half year since 1931, except the second half of 1934. Softwoods and hardwoods shared the gain. Lumber imports of Douglas fir and hemlock in the second quarter of 1936 were four times those of the first quarter. For the six months they totalled 89,000,000 feet. Total softwood imports of the first half year were 280,400,000 feet, the second quarter being twice the first three months. Imports of nearly 20,000,000 feet came from Russia in June.

Lumber Industry More Active

Southern Pine Orders, Shipments and Production in August in Excess of Year Ago

THE lumber industry of the country during August was at about 70 per cent of the 1929 weekly average production and slightly over 65 per cent of shipments, based on weekly reports of the National Lumber Manufacturers Association. The week ending August 22 was the second in four months in which new orders were in excess of production with production close to the top weeks of 1936, while shipments were heaviest of any week of the third quarter. All softwood regions but Southern cypress and Northern hemlock reported orders above those of the corresponding weeks of 1935; Southern pine, Western pine and Northern hemlock had shipments above last year; and all but Northern hemlock reported production above that of last year.

Southern Pine Activity

Southern pine mills during August reported an increase of about 33 per cent in orders compared with August, 1935, while shipments gained about 12 per cent and production 20 per cent.

Reports from 121 Southern pine mills for the week ended August 22 show:

Orders received amounting to 1,942 cars, or 40,795,000 feet, representing on the average, a decrease of 4 per cent below the previous week, but 33 per cent above the corresponding week of last year; shipments aggregated 1,758 cars, or 36,917,000 feet, an increase on the average, of 2 per cent above the preceding week, and an increase of 12 per cent above the similar week of last year; production totaled 37,170,000 feet, representing an increase, on the average, of 1 per cent above the week before, and an increase of 19 per cent above the like week of the past year.

Orders on hand yet to be filled at these 121 mills, on August 22, 1936, totaled 57,160,000 feet, equivalent to 4,150 cars. This represents an increase of 5 per cent above the aggregate unfilled order file at close of the preceding week.

Total stocks on hand August 22, 1936, at 105 reporting mills, aggregated 464,981,000 feet, or 92 per cent of normal and 13 per cent above this time a year ago.

New Floor Space Gains 66 Per Cent

In the first half of 1936, residential building in 37 states as measured in floor space was 66 per cent above that of the first half of 1935. Total construction contracts in 37 states in the first half of the year were valued at \$1,237,731,000, 78 per cent above a similar period of last year. Privately financed construction in the second quarter made large proportionate gain over the first quarter.

Warning!

ON GUARD AGAINST TIMBER'S PUBLIC ENEMY No. 1

ROT



**INDUSTRY
TRANSPORTATION
PUBLIC UTILITIES
HIGHWAYS
MUNICIPALITIES
MINES.....**

ARE SAVING MILLIONS BY TREATING TIMBER

● Treated timbers last from 3 to 10 times longer than untreated timbers. This means expensive replacements are less frequent, thus saving millions each year. Rot-proof your timbers with GRASSELLI CHROMATED ZINC CHLORIDE. This improved salt treating reagent has definitely increased preservative properties against rot, as well as being termite repellent and fire retardant. Write us for your nearest commercial pressure treating plant.

THE GRASSELLI CHEMICAL CO., Inc.



Founded 1839

Cleveland, Ohio



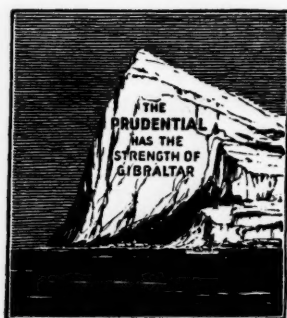
GRASSELLI
Chromated
ZINC CHLORIDE

SEPTEMBER NINETEEN THIRTY-SIX

Do you enjoy
a puzzle
in arithmetic?

Work this out! Assuming that
death terminated your income,
how long could your family sub-
sist without it?

IF THE ANSWER SEEMS WRONG, LET
US HELP YOU WITH YOUR PROBLEM.



THE PRUDENTIAL
INSURANCE COMPANY OF AMERICA
EDWARD D. DUFFIELD, President
HOME OFFICE, NEWARK, N. J.

FINANCIAL NEWS

Government Competition

PRESIDENT WILLKIE of the Commonwealth & Southern Corporation, correctly points out that unless the trend of Government in the Tennessee Valley to subsidize consumers at the expense of taxpayers is abandoned, every utility in the country will be open to Federal competition.

While admitting that electric energy consumption and sales of electric appliances in the Tennessee Valley have increased in the past three years, he points out that sales of both power and appliances by his system's companies located in the North have expanded in an even greater degree.

The question of Government competition with private industry and the invasion of states' rights, is involved in the attempt of Washington to operate private business wherever it feels inclined.

This country has progressed through the risk capital has taken and the encouragement of private initiative. It is not the function of Government to obtrude upon the affairs of private business. The regulatory bodies established by States are sufficient to keep in check unfair practices.

It is not the function of Government to usurp these powers and, above all, to engage in business operations. That has proven, from past experience, to be wasteful, inefficient and destructive to private investments. If permitted to go unchecked, government may enter any field it chooses and soon all authority, all direction of private affairs, would be centered in a Federal, collectivist control.

Conservative business men of the South are alarmed over the possibilities of this situation. The South, with its unadulterated American population, always has stood firmly for states' rights. Are these barriers to be taken down?

Railroad Income

ONE of the encouraging reports of the last month that is of major importance, is the definite improvement in the railroad business. Financial writers agree that indications at present are that the railroads are in the black for the first eight months of this year, as compared with net losses of around 80 million for the same period last year, after taking off fixed charges.

The fall months, normally, are the heaviest earning period, so the net income for the remainder of 1936 should be materially increased. This is coincident with the upturn of general business, which has progressed recently during a seasonal period when it usually declines.

Handicapping Business

PROBABLY no utterance of Governor Landon will meet with more favor on the part of business people, than that relating to the Excess Profits Tax, the repeal of which he advocates.

The application of this tax, is likely to be harmful to business enterprise, and particularly to those who have been in the habit of putting back earnings into business development.

The payment of larger taxes on profits earned, but not realized, is a further handicap to those not carrying large cash reserves. The idea of penalizing business, at a time when the country is struggling out of a depression, is wrong in conception and will prove detrimental in execution.

(Continued on page 56)

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"Have a
cigarette?"

The TAX on a pack and a half a day would pay the average FAMILY ELECTRIC BILL

Nine cents a day—9c—is all the average American family pays for the many conveniences of electrical service.

If, among that family there is smoked only a pack and a half of cigarettes daily, the TAX ALONE on those thirty little cigarettes is as much as the price of a full day's average use of electricity for lighting, radio and other home helps! And out of that nine cents, too, a sizeable cut is taken by the tax collector.

In that nine cents is represented, today, more electricity, more uses, at lowest prices in history.

Do you drive a car?—automobile users pay in gasoline taxes alone \$100,000,000 more a year than the electric bills for every home and farm in the United States.

Yet in the program of public utility "death sentences," ruinous competition subsidized with tax money, and crippling legislation against an industry which has consistently lowered prices and improved service—if the cost of government could be reduced by some 6½%, it would save the American people an amount that would equal a whole year's cost of electricity by every home in the United States.

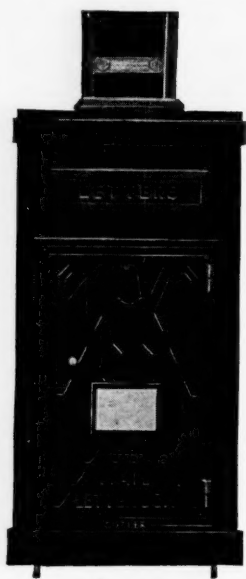
With tax bills going higher and higher it would seem real social values could be created by diverting governmental energy into constructive efforts toward a slight reduction in "operating costs" that would realize a saving equivalent to 100% of the nation's domestic electric bill.

THE COMMONWEALTH & SOUTHERN CORPORATION

MICHIGAN - OHIO - ILLINOIS - INDIANA - PENNSYLVANIA - GEORGIA - FLORIDA - MISSISSIPPI - SO. CAROLINA - ALABAMA - TENNESSEE

MODERNIZE

with the CUTLER MAIL CHUTE



No. 4550

Over fifty years of experience and improvement in Manufacturing, Equipment, Product and Service have made the Cutler Mail Chute an outstanding *Hall-mark* of progressive management in office buildings, hotels and apartments.

It is an indispensable feature of the equipment of Public Buildings.

Information and details furnished on request

CUTLER MAIL CHUTE CO.
GENERAL OFFICES, ROCHESTER, N. Y.

As Business Improves

Properly conducted commercial banking is devoted to cooperation with worthy enterprise.

As we have said previously, the problem of recovery is mainly up to industry and we are glad to offer our facilities in the service of our customers.

Correspondence invited.

BALTIMORE COMMERCIAL BANK

GWYNN CROWTHER, President

Baltimore, Maryland

Member Federal Reserve System

Member Federal Deposit Insurance Corporation



DRAWING and TRACING PAPERS

A quality line of selected papers for every purpose.

HERMES DRAWING TABLES

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Inquiries respectfully solicited.

F. WEBER CO.

Est. 1853

227 PARK AVENUE
BALTIMORE, MD.

Financial News

(Continued from page 54)

Financial papers report a larger distribution of surplus and profits through dividend payments on the part of corporations, and the list probably will grow materially before the end of the year. A larger distribution of earnings makes a strong appeal to the average stockholder. The assumption of the law is there has been an unfair withholding of profits which belong to stockholders, and this of course is open to doubt.

The old school of business believed in the strength and wisdom of surpluses as a bulwark in times of stress. To fail in that particular was thought to be profligacy that would lead to disaster.

Business Loans Increase

THE Federal Reserve Board issued figures in the latter part of August showing that business loans in the preceding five months had increased 12 per cent. This was the average. Some Federal Districts showed advances entirely out of line with the declines in other Districts.

Member bank reserves are again up to the two billion mark, notwithstanding the recent increase of 50 per cent in reserve requirements.

Although it seems a little early, there is a tendency in some quarters to discuss plans for checking any undue demand for commercial loans in order that the credit structure may not be endangered. It is doubtful, however, that this will assume any phase of definiteness for some time to come.

Credit

THERE has been, as stated elsewhere, a marked increase in some Federal Reserve Districts in commercial loans.

Reports of construction activities indicate an expansion on the part of private industry in plant enlargement and investments making for business extension.

In the field of new security issues, also, a list of those filing applications with the Securities and Exchange Commission is growing daily.

Evidently without regard to the results of the November election, confidence is felt that private capital is ready to embark into fields of private enterprise.

Another encouraging sign in this connection is the lower list of business failures. Dun & Bradstreet reported recently that for the week ending August 20, a new low point for the past sixteen years was established.

Vast Deposits

BANK deposits jumped last month. The Comptroller of the Currency reported that the country's national banks reported deposits June 30 that reached an all time peak of \$26,200,000,000. The report deals solely with national banks.

In New York city alone, in a report recently compiled by the American Banker, dealing with 151 banks located there, over \$16,500,000,000 were on deposit June 30, which was a new all time record. The estimate for all the banks of the United States—national, state and private—was \$58,300,000,000. Attention is quite correctly called to the fact, however, that much of the huge volume of deposits in New York represent balances held for the accounts of banks in other cities, and funds created by Federal borrowing and spending are greatly in excess of demand for commercial credit.

Comment is offered that "the phenomenon of idle money hoarded in banks is likely to continue until banks' depositors themselves increase the velocity of their spending and business grows so active that it needs both more credit and more capital from banking sources."

MANUFACTURERS RECORD FOR

Taxes... Taxes

WHO PAYS
THE TAXES?



IT'S THE BIGGEST "JOKE" THE WORLD HAS EVER SEEN *and it's on you, Mr. & Mrs. Wage Earner*

THE POLITICAL SPENDTHRIFTS have hidden your tax bill for years. You aren't supposed to know that. You are supposed to think the *rich* pay most of the taxes. They *do* pay heavy taxes.

But you pay, too . . . in **HIDDEN** taxes. Look at your next pay check. Let's say it's \$24. Take out $\frac{1}{3}$ for national, state and local government costs. That \$8 is your weekly share.

If you make \$30, your weekly bill is \$10. If you make \$100 a week, your share of government expense is \$33, because government spending now equals nearly $\frac{1}{3}$ of all we *all* make. There are 53 taxes in every loaf of bread. 40% to 60% of your gasoline money goes for taxes.

WHAT TO DO

Your clothes are taxed before you buy them. Everything you use is weighted down with taxes . . . and billions of tax dollars are wasted by careless, irresponsible officeholders. We need lawmakers who insist on **ECONOMY**.

Big tax cuts could be made just by cutting out wastes. We could have good government, all necessary relief. *more* good

roads! Only you can force the **WASTERS** to quit *throwing your money away*. First, make this resolution:

"I RESOLVE to oppose every present officeholder who cannot prove to me that he has used all his influence to reduce the cost of government."

Now resolve to *keep it*! Remember it when you vote. You have all the power. You can oust the political spendthrift.

ACT TODAY

Don't wait. You can stop extravagance **QUICKLY!** Write these 3 letters and mail them today:

One to your MAYOR (or the County Clerk, if you live in the country). One to your GOVERNOR. One to the PRESIDENT.

Write only one sentence in each letter and sign your name and address. Say: **"I WANT THE COST OF GOVERNMENT REDUCED!"**

BUT DO IT TODAY! It's *your* job. You alone can protect yourself. Don't fail. Let the spenders know their game is up. Let's all pull together. Help us to give America back to the people.

Write this letter today!

"I want the cost of Government REDUCED!"

MAIL 1. Your Mayor (or your County Clerk)
COPIES 2. Your Governor
OF IT TO: 3. The President of the United States

REGISTER—VOTE—Give your support to candidates, regardless of party, who **WILL** cut the waste out of government.

Space for this message is provided by **MANUFACTURERS RECORD** because of a firm conviction that a reduced cost of government is vital to the interests of all its readers

INDUSTRIAL NEWS

Vice President of Worthington

Thomas Cruthers, connected with the Worthington Pump and Machinery Corporation of Harrison, N. J., since 1907, has been appointed vice-president of the corporation. He was promoted to assistant general sales manager in 1930, and two years later was appointed assistant vice-president in charge of sales. His duties will now be to direct the corporation's sales activities with large steam power stations, railroads, waterworks, sewage, drainage and irrigation projects, and will also have charge of the general traffic department.

Wheelco Instruments Appointments

Elmer A. Schneider, former owner of the Mishawaka Pyrometer Instrument Company, is now production manager for Wheelco Instruments Company, Chicago, Ill. George W. Keller, formerly vice-president of Brown Instrument Company, is now in charge of the Eastern Sales Division of Wheelco Instruments Company, manufacturers of Pyrometric Heat Control devices.

Power and Engineering Exposition

A combination of buying forces is expected to converge at the Twelfth National Exposition of Power and Mechanical Engineering, at Grand Central Palace, New York, November 30 to December 5, 1936, under the management of the International Exposition Company, Grand Central Palace, with Charles F. Roth in charge. First of these forces is the purchasing of machines and equipment to accommodate increasing business in good times; second, the need for normal replacement of equipment which has become obsolete, or which has been outdated in efficiency by

new inventions and improvements; third, the volume of purchasing to overcome the abnormal accumulated obsolescence of depression

Buys Edge Moor Iron Company

Capitalized at \$1,000,000 the Edge Moor Iron Works, organized by new interests, has purchased in its entirety the Edge Moor Iron Company, of Edge Moor, Del., and full operation started. Thomas J. Dillon, of New York City, former vice-president and treasurer, is president; Percy R. Gardiner, Toronto, Canada, vice president; and John H. Shively, Wilmington, Del., secretary and treasurer. While continuing the manufacture of boilers, water wall, economizers and other power plant apparatus, the new company will also operate as fabricators in iron, steel and alloys, and manufacture all kinds of plate equipment.

Vice-President Iron and Steel Engineers

Louis F. Coffin, superintendent, mechanical Department, Sparrows Point, (Md.,) plant of Bethlehem Steel Company has been elected first vice-president of the Association of Iron and Steel Engineers, Pittsburgh, Pa.

Hercules Executive Changes

Directors of the Hercules Powder Company, Wilmington, Del., have elected Charles A. Bigelow a vice-president and member of the executive committee. At the same time, Mahlon George Milliken, general manager of the Cellulose Products Department, was made a director, and William Robert Ellis, assistant general manager of the Explosives Department, was made general manager, taking the place vacated by Mr. Bigelow.

President of Pittsburgh Testing Laboratory

A. R. Ellis, who recently became president of Pittsburgh Testing Laboratory, Pittsburgh, Pa., entered the employ of the company in 1905 following his graduation from Cornell University with the degree of Civil Engineer. He later became an inspector of engineering materials, and in 1910 was made chief engineer, and in 1917 he was made manager of the New York branch; assistant general manager in 1918; general manager and director in 1921; vice president and director in 1929, and president and director in 1936.

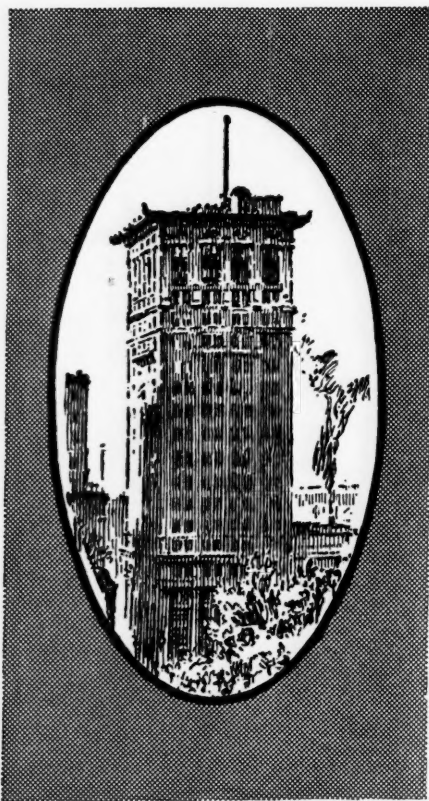
Rubberseal Copper Applications

Sandwiched between two layers of a mineral rubber, Anaconda's "Electro-Sheet" copper forms a solid metal center for long sheets of "Rubberseal Copper," by which the new combination is known, and which is made in standard rolls 24 feet long and 30 inches wide, according to the Mitchell-Rand Manufacturing Company, of New York City, manufacturers of the product. "Rubberseal Copper" is recommended for termite proofing, weather resistance and sealing in of structures intended to be air conditioned. It remains flexible under all temperature conditions and will self-weld or "heal" when punctured. About one-sixteenth inch of the mineral rubber compound is applied to each side of the bare copper sheeting, so as to form a cushion.

Joins Republic Steel

Vice President N. J. Clarke of Republic Steel Corporation, Youngstown, Ohio, announces the appointment of Hoyle Jones as district sales manager with headquarters in Tulsa, Okla., filling the vacancy caused by the recent death of C. S. Powers. Mr. Jones has had an active career in the steel and allied industries, beginning in 1904 with the United Zinc and Chemical Company. Following the World War in which he was a captain in the Ordnance Department of the United States Army, and was stationed at St. Louis with jurisdiction over the production of war materials from the Mississippi River west, he organized and became president of Superior Tube Company, remaining head of that organization until just prior to his appointment as district sales manager of Republic.

(Continued on page 60)



CAPITAL AND SURPLUS \$5,500,000

A VIRGINIA BANK With Nation-Wide Contacts

Taking care of banking transactions for extensive manufacturing activities for more than seventy years, First and Merchants has built up wide connections. In fact, this is a Virginia bank with nation-wide contacts.

FIRST AND MERCHANTS National Bank of Richmond

JOHN M. MILLER, JR., President

Member Federal Deposit Insurance Corporation

A UTILITY'S DUTY TO ITS CUSTOMERS



A utility's responsibility to its customers is simple: To give the best service at lowest reasonable cost.

A company can tell from complaints it receives whether or not service is adequate. There are relatively few complaints about quality of service these days.

Since 1928, the average electric rate charged residential customers of Associated companies has come down 27%—average annual use has increased 50%. During this period, moreover, there was the depression and a heavily increasing burden of taxation. Naturally, reduced rates and increased expenses have had an unfavorable effect on net earnings.

In the industry as a whole, rates declined 24% and use went up 45% during these same years.

ASSOCIATED GAS & ELECTRIC SYSTEM



ON OUR SYSTEM

TWO LININGS ARE MADE—

ONE OF FINE TEXTURED, DELICATELY TINTED, ORNAMENTAL TILE FOR THE BATH.

THE OTHER OF COARSE GRAINED FIRE BRICK FOR THE STEEL MILL FURNACE.

Different materials, different finishes, different uses.

BUT, THE ONE FUEL—NATURAL GAS

The solution of your heating problem
CONSULT YOUR LOCAL GAS COMPANY

or write us

SOUTHERN NATURAL GAS COMPANY
Watts Building Birmingham, Ala.

INDUSTRIAL NEWS

(Continued from page 58)

Air Conditioned Seed Storage

Because the Reuter Seed Company of New Orleans, La., found that seed stored in an air conditioned room maintained a much higher state of germination, the company placed a duplicate order for Westinghouse air conditioning equipment, thereby doubling storage facilities. Both installations were made by the Equitable Equipment Company, New Orleans.

New Type Lighting Fixture

Benjamin Electric Manufacturing Company, Des Plaines, Ill., announces a new Benjamin lighting fixture unit combining the light from a 250-watt Mercury Lamp and one 300 or two 150-watt Incandescent Lamps, producing, it is said, a soft and diffused light which provides a high degree of eye comfort and a more pleasant light.

Replacement Kit For Electric Tools

To meet special needs of the series-wound motors used in portable electric tools, such as valve-refacers, drills, saws, hammers and grinders, The Ohio Carbon Company, Lakewood, Ohio, has prepared a carbon brush replacement kit (No. 7). All brushes in the kit are so made that, without undue abrasiveness, they assure both the mica insulation and the copper commutator bars wearing equally, thus producing a smooth, sparkless running surface.

Joins Arthur D. Little Staff

Horace N. Lee, formerly of Harvard University, has joined the research staff of Arthur D. Little, Inc., Cambridge, Mass., chemists-engineers. For more than 20 years Mr. Lee has specialized in fiber study, working in Canadian and American government laboratories and in microscopical and other investigations of wood and paper at the Hamermill Paper Company, Erie, Pa. He has developed a technique for the microscopic examination of fibrous materials which has hardly been equaled, it is said.

G-E Exhibit at Iron and Steel Exposition

In the exhibit of the General Electric Company at the Iron and Steel Exposition to be held in Detroit September 22-25, the newest G-E developments will be shown. Steel-mill brakes, Type CR9523 three-shoe brake, connected to a 50-horsepower d-c motor so that it may be seen in operation, will be displayed; the Tensiometer, a device for regulating the tension between rolls on a strip mill; d-c contactors for steel mill use; induction motors; cable; Pyranol transformers and capacitors; switchgear; a Thruster unit, and various laboratory products are included in the exhibit.

Dust Control Equipment

In an article on "How to Install Dust Control Exhaust Piping," C. A. Snyder, dust control engineer, The American Foundry Equipment Company, Mishawaka, Ind., states that hoods should be constructed free from sharp edges to meet the needs of the particular application, the dust creating process should be enclosed as fully as possible without unduly interfering with operations, and piping should be run in a direct line to the dust control system if possible without interfering with trucks, cranes, etc.

Westinghouse Tests Giant Motors

Two 7000 horsepower electric motors for steel mill service, coupled together on test in the East Pittsburgh Works of Westinghouse Electric and Manufacturing Company, were observed by operating men of the Carnegie-Illinois Steel Corporation representing plants in Clairton, Duquesne and Homestead. Each motor weighs 200 tons, turns at 40 RPM, and is among the largest and most powerful ever built. One will be installed in the Homestead plant of the Carnegie-Illinois Company to furnish the main drive for a new 100-inch plate mill, and the other in a mid-west steel plant.

Lincoln Will Handle German Oxygen Machine

On a recent trip to Germany where he investigated a new type of machine for manufacturing oxygen, J. F. Lincoln, president and general manager of The Lincoln Electric Company, Cleveland, Ohio, completed negotiations with The Messer Company, Frankfort-On-Main, for representation in the United States. The machine, automatic and low priced, was designed by the Messer Company, which holds the patents. The Lincoln Electric Company will handle negotiations for use of any equipment sold or manufactured under the Messer patents in the United States.

TRADE LITERATURE

SEAMLESS STEEL PRODUCTS—

Catalog K — illustrating and describing seamless steel products for high pressure and high temperature requirements as manufactured by the forged, rolled and drawn processes.

Seamless Steel Equipment Corp., New York City.

WESTINGHOUSE AIR CONDITIONING—

Folder—illustrated, devoted to Type SW-06 Mobile Unit for air conditioning individual rooms.

Westinghouse Electric & Manufacturing Co., Mansfield, Ohio.

BAKELITE MOLDED—

Booklet—illustrated, containing detailed description of Bakelite molded, characteristics, properties, etc.

Bakelite Corp., New York City.

LIGHTING HANDBOOK—

Revised Edition—elaborates on specialized fields of lighting, 4 by 6½ inches, copies available at 10 cents each from Commercial Engineering Department.

Westinghouse Lamp Company, Bloomfield, N. J.

CENTRIFUGAL ACID PUMPS—

Bulletin W-350-B1—illustrating Worthington Centrifugal Acid Pumps, Type CG, low duty series, capacities to 130 g.p.m., heads

to 70, for belt or motor drive.

Worthington Pump and Machinery Corp., Harrison, N. J.

VENTILATION FOR BUILDINGS—

Bulletin V-100-B—illustrating and describing "common sense" ventilation for industrial and commercial buildings.

The Swartwout Co., Cleveland, Ohio.

INSULATION—

Booklet—68 pages, revised edition of "Barriers to Industrial Waste," illustrating and describing more than 50 insulations for all types of heated or refrigerated equipment.

Johns-Manville Corp., New York City.

FOAM-MAKING WATER NOZZLE—

Folder No. 161—illustrated, "The Newest Development in Fighting Fires," presenting a new method, mechanical rather than chemical, of making foam for fighting flammable liquid fires.

Pyrene Manufacturing Co., Newark, N. J.

PORCELAIN ENAMEL—

Booklets—"Handbook on Design of Metal Parts for Porcelain Enameling—No. 1," presenting authentic, practical information as to the basic requirements for the proper designing of pressed steel shapes to be porcelain enameled.

Porcelain Enamel Institute, Chicago, Ill.

(Continued on page 68)

Florida Beach Property For Sale

*Ocean frontage
on Anastasia Island
near St. Augustine*

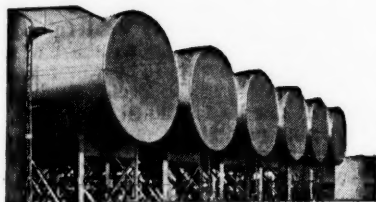
*Town property
at Flagler Beach
Flagler County*

*Investigate the possibilities of Beach
property for development
in Florida*

Model Land Company
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St. Augustine, Florida

SOUTHLAND PRODUCTS

—WELDED OR RIVETED—



We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED
OR RIVETED
CONSTRUCTION

This applies to field as well as shop built equipment.

Write us for information and quotations.

CHATTANOOGA BOILER & TANK CO.
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NORFOLK TANK CORPORATION

NORFOLK, VA.
Baltimore Rep: Allan U. Bevier Inc., American Bldg.

STEEL PLATE FABRICATORS

TANKS:		Standpipes	Angle Rings
Pressure	Water	Bins Hoppers	Dredge Pipe
Truck	Process	Stacks	Asphalt Equipment
Trailer	Storage	Pipe Coils	Industrial Specialties

STEEL PLATE CONSTRUCTION TANKS STACKS DREDGE PIPE

Acid Tanks	Digestors	Jacketed Tanks	Settling Tanks
Breechings	Dryers	Molasses Tanks	Standpipes
Condensers	Filters	Oil Storage Tanks	Stills
Coolers	Gasoline Tanks	Pressure Tanks	Vacuum Tanks

LANCASTER IRON WORKS
LANCASTER, PA.

NEW YORK CENTRAL IRON WORKS

HAGERSTOWN, MARYLAND

Steel Plate Fabricators

TANKS, PRESSURE VESSELS, STACKS, BREECHINGS, ETC.

Estimates cheerfully given.

Water Purification Plants

Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines
Swimming Pool Filters

E. W. BACHARACH & CO.

Rialto Bldg.

Kansas City, Mo.

WATER FILTERS

Pressure and Gravity type for Municipal Water Supplies, Rayon Manufacturing Plants, Textile Finishing Establishments, Raw Water Ice Plants, Laundries, Etc.

ROBERTS FILTER MANUFACTURING COMPANY
604 Columbia Avenue

Darby, Pennsylvania

Filtration and Pumping Equipment

For Water Works and Swimming Pools
Sales and Installation

BURFORD, HALL AND SMITH

140 Edgewood Avenue, N. E.,
Atlanta, Georgia

For Warm Relations in Fabrication

"WILL HOLD WATER"— A Universal Test



That's what they're made for!
All our tanks are given the cold water, soap and air pressure tests to insure against leakage. Let us figure on your tank needs. Tell us your problems or requirements—Send your specifications or write for "Tank Talk"—No. 12-D.

R. D. COLE MFG. CO.

COLE

TANKS & TOWERS

• NEWNAN, GEORGIA •

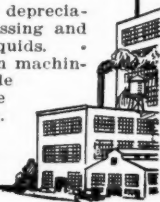
DAVIS CYPRESS TANKS



Some especially desirable attributes must surround Davis Tanks—when you realize that leading manufacturers and railroads of the South have bought them repeatedly for 46 years. In truth, there are two reasons:

1. Cypress is unequalled for durability, low depreciation and varied usefulness in storage, processing and handling chemicals and other liquids.
2. Davis tanks, built by modern machinery and skilled men, can be made to fit any factory need, in any size and shape. Catalog on request.

G. M. DAVIS & SON
P. O. Box 5, Palatka, Florida



I'D RECOMMEND LYONORE
FOR ANY JOB

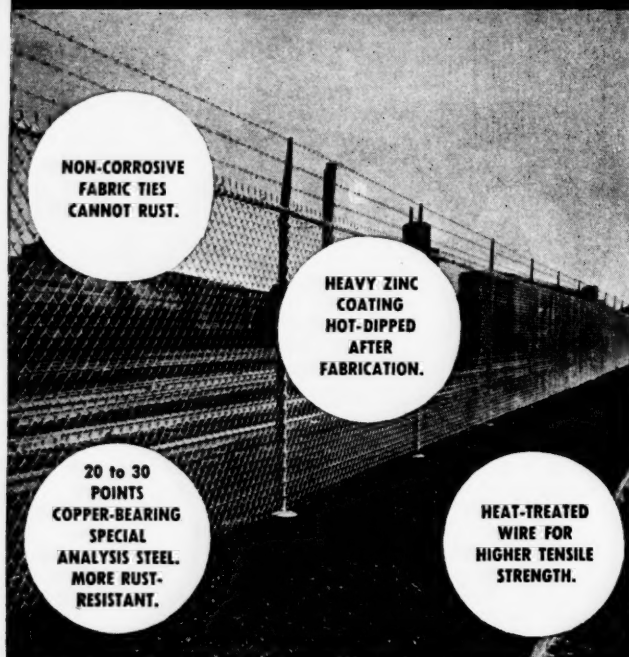
Forms easier and cheaper—lasts much longer—costs less per year of service than any other commercial sheet metal. That's the whole story on Lyonore. Get the facts; make your own comparisons. Write today.



LYON, CONKLIN & CO. INC. BALTIMORE, MD.

Modern Metallurgy

GIVES LONGER LIFE TO THIS MODERN PROTECTION



NON-CORROSIVE
FABRIC TIES
CANNOT RUST.

HEAVY ZINC
COATING
HOT-DIPPED
AFTER
FABRICATION.

20 to 30
POINTS
COPPER-BEARING
SPECIAL
ANALYSIS STEEL.
MORE RUST-
RESISTANT.

HEAT-TREATED
WIRE FOR
HIGHER TENSILE
STRENGTH.

★ TR. MRK. REG. U. S. PAT. OFF.

● You can't see metallurgy—but metallurgy is what makes the difference between tin-can stock and the keenest razor-blade steel. Modern metallurgy adds many years to the life of Continental Chain-Link fence . . . Special-analysis copper-bearing (0.20 percent minimum) steel, inherently more rust-resistant . . . Wire heat-treated for tensile strength and elasticity . . . Heavy coating of hot-dipped zinc for still better life and appearance. Fabric ties of solid non-corrosive metal that defy rust permanently.

At every point—posts, gates, fittings, etc.—Continental Chain-Link fence embodies modern metallurgy to bring you more years of service at lower annual cost.

★ CONTINENTAL Chain-Link FENCE

LIFETIME PROPERTY PROTECTION

Find out, without cost or obligation, how Continental's modern Chain-Link fence fits your problems of protection for persons and property. Check as desired—Catalog and Information Manual . . . Analysis and estimate by fence engineers . . . Mail to Continental Steel Corp., Kokomo, Indiana. (Plants at Canton, Kokomo, Indianapolis.)

Name.....

Address.....

Type of Property.....

Get Analysis and
Estimate from Con-
struction Engineers

No Obligation

Also Valuable
Manual on Prop-
erty Protection

AND SO IT GOES

The More You Make The Less You Have

is a fact, as the public realizes that wasteful political spending is demanding an ever-increasing share of its income. Taxes are oppressive now and the worst is yet to come under the new tax law and the Social Security Act, for these tax laws will not be felt until next year. The average individual is now paying about 30 per cent of his income for taxes as compared with about 11 per cent some years ago. Steadily employed wage earners must work about 7 days each month for the government. Based on average earnings of \$30 a week, a worker is directly or indirectly paying a tax of \$9 a week to support the government and its subdivisions and about 3,000,000 public office holders, many of which have the power to set and control the tax rate the public must pay.

It's True What They Say

about the reported failure of Mrs. Eleanor Roosevelt's widely publicized subsistence homestead project at Reedsville, W. Va., which has been declared "financially unsuccessful" by Professor Rexford Guy Tugwell, head of the New Deal's Resettlement Administration. It was estimated that the cost per unit in that government-created community would be \$3,000, but now the cost for a house and 2½ acres is \$10,375. This is not "tops" for it is reported the cost per home in a community project at Sioux Fall, S. D. is over \$20,000, and the families cannot possibly repay that cost. Abandonment of 34 subsistence projects, reported as financial failures, threatens the whole subsistence program, but the taxpayer's money is gone.

Electric Refrigerator Sales

in the South have been making rapid gains. More than 392,000 electric refrigerators were sold in the 16 Southern States in the first six months of 1936, or 17 per cent more than during the corresponding period of 1935.

Paper Rain Coats

are a reality, for reports from Japan indicate paper waterproofed in tung oil is being made into raincoats to retail there at about 25 cents each. They can be folded in small packets it is said without developing cracks and are intended primarily for sale at sports events.

The 22 Mile Tunnel

to serve coal mines of the Pocahontas Field in Virginia and West Virginia is said to be the largest underground "drain" in the world. Work has been in progress for four years on this tunnel 4 feet high and 14 feet wide that runs through a vein of coal. A modern track is being laid its entire length.

Thar's Gold In Them Hills

is indicated by the revival of the gold mining industry in Georgia and the Piedmont Carolinas. A considerable number of mines are being operated today in Rowan, Mecklenburg, Stanley, Davidson, and other North Carolina counties.

More Oil Reserves

were developed in the Texas Louisiana Gulf Coast area in the first half of 1936. New reserves amounting to 79,000,000 barrels of oil included 7 new fields and developments in proven territory. With the 31,000,000 barrels produced, there was a total of 110,000,000 barrels of oil discovered in this Gulf Coast area.

Industrial Gains In Employment

in Virginia and North Carolina are recorded in recent surveys. Representing the general upward trend in business throughout the state, North Carolina reported 1,587 industries, each employing 5 or more persons, have been established since May, 1934, giving employment to 16,000 persons. Virginia reports an increase of 5 per cent in employment in manufacturing enterprises during the first half of 1936 over the first six months of 1935, and 15 per cent more than during the first six months of 1929.

Texas Is Broadening Its Outlook

by the installation of the second largest telescope in the World at the University of Texas astronomical observatory constructed on Mount Locke. The reflecting type 80-inch concave mirror is mounted in a rotary observatory dome which weighs 125 tons revolving on 26 high-test nickel iron truck wheels similar to locomotive wheels.

Railroads Are Hauling Freight

an average distance of 200 miles at an average rate of less than 1 cent a mile. Passengers can make an average journey of 40 miles at an average of less than 2 cents a mile.

Florida Gathers Moss

bringing income to the state and giving employment to several hundred persons. Centered largely around Brooksville, the industry ships about \$1,000,000 worth of moss annually with demand said to be greater than the supply. The gatherers get from \$5 a ton for green moss to \$50 a ton for cured moss. The largest moss gin in America is at Bushnell, Fla.

Motor Vehicle Taxes

levied upon American motorists last year would have been sufficient, if they had been used in the purchase of new cars, to have increased the automotive manufacturing business by more than 50 per cent. The automotive tax bill last year amounted to \$1,286,156,000. On the basis of an average of \$700 per car, that would have purchased 1,837,367 automobiles.

Goes Like Sixty

may well describe a new small automobile made in France. It makes 60 miles an hour, travels 60 miles on a gallon of gasoline and costs \$660.

Grape Growing In Florida

is making rapid progress. During the recent season more than 50,000 pounds of grapes were moved weekly from Lake County through the Florida Grape Growers Association.

Vegetables Without Soil

sounds harder than to make bricks without straw. But tomatoes, strawberries, and sweet peas are being grown in chemically treated water heated by electricity by California nurserymen. The idea has been taken from the laboratory at the University of California where Dr. W. F. Gericke has pioneered and developed nutrient plant solution agriculture.

Power Without Wires

has enormous possibilities for reducing utility operating costs although it will mean the loss of a vast market to suppliers of materials and equipment for transmission lines. Dr. Nicola Tesla, who has many scientific achievements in electrical development to his credit and who has been engaged for 35 years in wireless transmission of power experiments, anticipates that within a year a power plant would be in operation to crown his efforts with success.

More New Firms

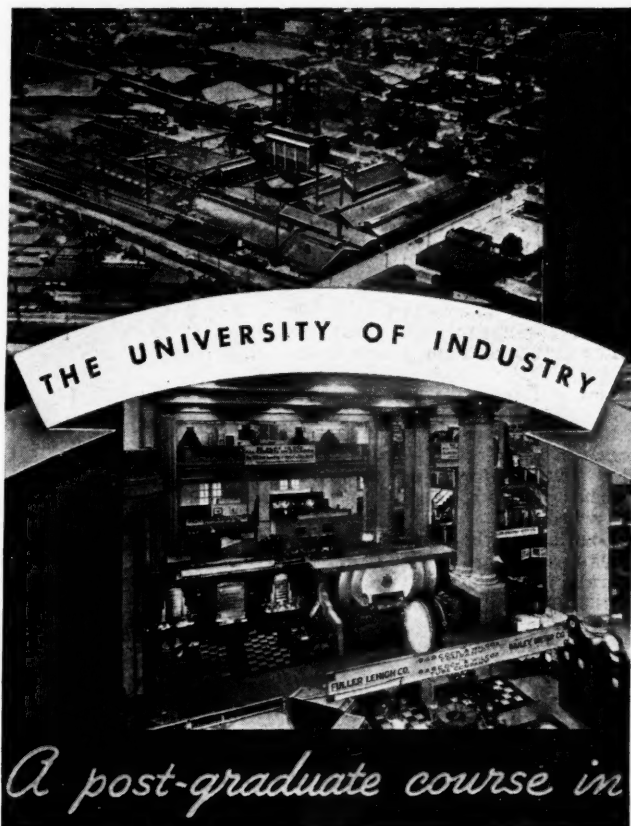
were established in Atlanta so far this year than in all of 1935. Of 103 new firms which have increased Atlanta's payrolls by over \$3,000,000, 69 new factories, distributing, sales, and 34 residence representatives were reported as compared with a total of 95 new firms for the first seven months of 1935.

Limitation Of Real Estate Taxes

is receiving greater attention as the nation's tax burden grows. Georgia, Colorado, Washington, Oregon and Arizona are assured of having on the ballot in the coming fall election a proposed measure for limitation on the general property tax. Approval of a 10 mill rate limit has been given by the Pennsylvania General Assembly and if a second secession confirms the approval the measure goes to the vote of the people at the general election.

Hot Water Installations

are lacking in residential units as indicated by a survey which shows that 66 per cent of urban dwellings have both hot and cold water facilities and 25 per cent had only cold water equipment.



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The Buying Power of Southern Railroads

(Continued on page 30)

carriers' revenue, they are still suffering from lack of earnings due to the depression and also from various forms of unregulated competition. It is believed that the new Motor Carrier Act will result in some benefit not only to the railroads but to other carriers as well, although there are still many problems which this legislation leaves unsolved.

Gains in Passenger and Freight Traffic

Railroad passenger business is being regained by offering patrons greater service and comforts, by air-conditioning coaches, reducing rates, and by speeding up schedules.

Loading of revenue freight is setting a six-year record for the first 31 weeks of this year, the total to August being 20,163,968 cars as compared with 17,980,898 cars for the corresponding period of 1935, and 18,400,298 cars in 1934.

Progressive Spirit

In reviewing the railroad situation as a whole, the president of one of the leading systems of the country cites the great strides which the railroads have made in improving their properties and their services under the stress of hard times as evidence of the progressive spirit which is at work in the rail transportation field. Railroad men all along the line have shown they are receptive to new ideas, willing to learn, ready to experiment. That spirit is insurance for the future.

"They have demonstrated" said J. J. Pelley, president of the Association of American Railroads, "their ability to carry on under difficulties; to cut the unit cost of producing and transportation while continuing to pay the highest transportation wages in the world; to

improve their service and methods; in short, to maintain their position as the finest general transportation system in the history of the human race, and to keep that transportation system ready to go forward as America goes forward."

PROMOTE SOUND RECOVERY

IN listing certain definite steps necessary to bring about sound recovery in the railroad industry, A. C. Needles, president of the Norfolk and Western Railway, cites the following:

First—Repeal laws which rigidly restrict railway operation and management. The railroads should be given freedom to exercise greater authority over their business.

Second—Repeal laws which have saddled upon the railroads tremendous increases in expenses. Increased revenue cannot be used for purchases and payrolls when taken by taxes.

Third—Withdraw the vast government subsidies granted to the railroads' competitors. Place all forms of transportation on an equal basis. The railroads are not afraid of fair competition.

The public is the most vital factor in the achievement of these objectives. For the public is responsible for governmental action. A vigorous public demand to give the railroads a square deal, and their rightful opportunity to contribute to national recovery, will bring definite favorable results.

Because they are the largest single customers of other industries, and one of the country's greatest employers of labor, the welfare of the railroads is vital to economic recovery and national progress.

the need for social security, but it is conscious also of the many impractical and fundamentally unsound problems involved in its administration. The tax rates are high in view of the interest-bearing Federal reserve the Act proposes to create, and provisions carried in State Acts applicable to individual employers and employees are seemingly not flexible enough to avoid some discrimination among individuals and among states. It is conceivable that unemployment, under the Social Security Act, as it now stands, may stabilize at levels higher than normal and, under the pooled fund system, inflict penalties upon certain employed industries in order to sustain the unemployed in both competitive and unrelated industries. At the scheduled tax rates, it is probable that reserves will be greatly in excess of the cost of social security administration and relief. If the system could be worked out on a cost instead of an annuity basis, lower rates could be assessed and there would be less danger of its becoming a political football and a temptation to extravagance.

Mass control efforts to reform the economic system usually result in disjointed human relations. There is no formula for universal prosperity, except at a penalty that must eventually lower both human and economic standards. The immediate gain is a loss to posterity. Morale is weakened through the encouragement offered the indolent and through the discouragement inflicted upon the industrious. Insurance as an institution is sounder, safer and more economical under agreements in private competition than under implied legislative contracts. Progress and prosperity cannot be legislated for the general welfare short of destroying the private foundations upon which they are built. With everybody adjusted to lower standards under Federal regulation, there will be little incentive for private enterprise. The peaks and valleys might be smoothed out, but the level will be much lower than the average of the good and bad under competitive private administration.

Let it be hoped that Social Security, if declared constitutional, can be worked out on principles fair and equitable to employer and employee, producer and consumer, and all concerned. It is doubtful if this can be done under the law now in effect or under any other Federal law.

Social Security Taxes

(Continued from page 31)

Lumber Industry alone will have its cost per 1,000 feet of production increased from about 11 cents in 1936 to 70 cents in 1949 and thereafter. In 1949, it will pay nearly eleven million dollars in social security taxes. This is the estimated burden upon f.o.b. mill realization. The price to the ultimate consumer will include taxes paid by distributors and processors and will, on a conservative estimate, carry a social security tax burden of at least \$1.00 per 1,000 ft. by 1949. This means that the consumer, or the homebuilder, in 1949, will pay an indirect tax of about \$20 on each carload of lumber bought. This tax to the consumer during 1936 will amount to some \$3.00 per carload of 20,000 ft. The consumer will be taxed directly for social security and

will in addition pay an indirect tax to absorb the burden put upon business and industry. The constant cost to the consumer of carrying social security might indeed greatly exceed the remote cash benefits to be derived from it.

This effort to appraise the normal cost of social security does not include the Federal Old Age Benefit tax on employees, nor the tax that some states will assess employees for Unemployment Compensation. This would probably involve an additional \$6,500,000 by 1949, bringing the total contribution to social security of the saw and planing mill industry in the eleven Southern states named, under normal conditions and under the currently established rates, to more than \$17,000,000 a year, or \$1.12 per 1,000 ft. of its normal production.

The lumber industry sympathizes with the humanitarian principles underlying the Social Security Act. It recognizes

This is the first of a series of discussions by business men on the possible effect of the Social Security Act upon basic industries of the South. The Coal Industry will be the subject of the next article in the series which is to be published in the MANUFACTURERS RECORD.

Street Railway Equipment

Many Southern street railway systems are modernizing and adding to transportation equipment. Among recent orders placed were 32 single motor trolley buses by the Louisville Railway Co. and 7 single motor trolley buses by the Shreveport Railway Co. from the J. G. Brill Co. the latter order making a total of 27 Brill units acquired since the Shreveport Railways commenced using trolley buses in 1931.

The Houston Electric Co. ordered from the American Car & Foundry Co., four additional a.c.f. motor coaches powered by the Hall-Scott horizontal engine.

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Increase Consumption Of Explosives

INDUSTRIAL explosives consumed in the United States during the first six months of 1936 amounted to 170,773,977 pounds, 30,249,819 pounds more than for the corresponding period of last year.

With the South supplying about 43 per cent of the country's minerals and its construction volume showing an increase of about 80 per cent over last year, this section which, in 1935, produced and consumed approximately 78,000,000 pounds of explosives, showed a substantial gain in the use of explosives.

Coal mines of the country as usual, reports the Institute of Makers of Explosives, were the largest consumers of explosives, but the greatest gain in the number of pounds consumed was made by construction projects, while the country's ore mines led all other industries in their percentage of gain, with increases in quarrying and agricultural use.

Coal mines used up to the end of June 63,811,123 pounds, a country-wide advance of 4,871,038 pounds; construction enterprises took 47,149,945 pounds, or 9,980,000 pounds in excess of last year; the mining of ore required 30,626,874 pounds of explosives, 8,577,167 more pounds than last year; quarries and non-metallin mines used 23,219,240 pounds, a gain of 5,286,334 pounds, and during the first six months of 1936, 5,966,795 pounds of explosives were in demand for a variety of

other purposes, including agriculture, in which dynamite is being employed increasingly for ditch digging, stump and boulder blasting, tree planting, subsoil drainage, etc.

Tampa Dredge Built Of Steel Fabricated In Pennsylvania Digs Gold In South America

GOLD, as ever, continues to lure men to the far corners of the world. But, in striking contrast to hand-labor methods employed when pack mules transported supplies to new fields over axe-blazed trails, modern machinery today, thanks to adequate transportation systems of rail, water and air, performs its service in recovering the precious metal wherever search discloses deposits.

So it is that steel fabricated in Pennsylvania, equipment and machinery made in California and other states, were required to build a dredge, estimated to entail an outlay of \$500,000, the hull of which was constructed at a Tampa, Fla., shipyard, to dig for gold in South America.

The Yuba Manufacturing Co., San Francisco, received the contract from Pato Consolidated Gold Dredging, Ltd., for a steel hull and superstructure for a new 10-cubic foot capacity gold dredge to be used in Colombia, S. A.

The steel was fabricated by Lancaster Iron Works, Inc., Lancaster, Pa.,

and assembled into a dredge at the Tampa Steam Ways, Tampa, Fla. Using the steel hull as a barge, all the steel superstructure, the two steel spuds, part of the machinery and the manganese steel dredge buckets were shipped from Tampa in tow to Baranquilla, Colombia. Total shipment was 1250 tons and it was 14 days in transit. The balance of the machinery will be shipped directly from the Yuba plant in California.

The Yuba Manufacturing Co. is also building a similar dredge for shipment to Colombia for erection by Colombian Mining and Exploration Co., Ltd. The steel for the hull and superstructure is likewise being fabricated by the Lancaster Iron Works, Inc.

Robinson-Patman Law

(Continued from page 35)

ers an equality of price save only when in the special instance, their own methods or quantities of purchase create a cost difference between them. It comes down to this: the nearer the manufacturer gets to one price 'by the case or the carload' to selected types of purchasers, the safer he is.

"It would seem that the chain must buy f.o.b. factory and do its own distributing to branch stores or that the list prices must be f.o.b. factory. In which event the branch stores would pay the delivery charges just as any other purchaser.

Decentralization and Relocation of Industry

"It seems to me that this is a very possible meaning of this law. And if this is true there will follow from this law a revolutionary decentralization and relocation of industry. Mass production in highly specialized centers will give way to series of small factories. Mass distribution will disappear with mass production. Labor and population congestion will break up in the diffusion of industry. Property values, mortgage and other securities will be revalued. Rents and tax rebates will be reduced. Prices will become factory prices and the goods produced will accumulate transportation charges as they move outward until it becomes cheaper to produce them somewhere else. Thus regional production and distribution areas will be created and industry will be relocated within these areas, taking the working and service population with it.

Open Price Selling

"A supervisory control of price movements is implied which is wholly new. It is not the power to fix prices but it is the power to hold price levels unless an economic justification for change and its direction up or down can be demonstrated by those who propose the change.

"It becomes obvious that compulsory open price selling is a necessary adjunct to a law of this character and purpose. The law distinctly limits meeting a competitor's price, services or facilities by equalling it or them—meeting not exceeding competition.

"And purchasing competitors must be given the same discounts, rebates, allowances or advertising service charges when they buy the like quantity or the like grade or quality."

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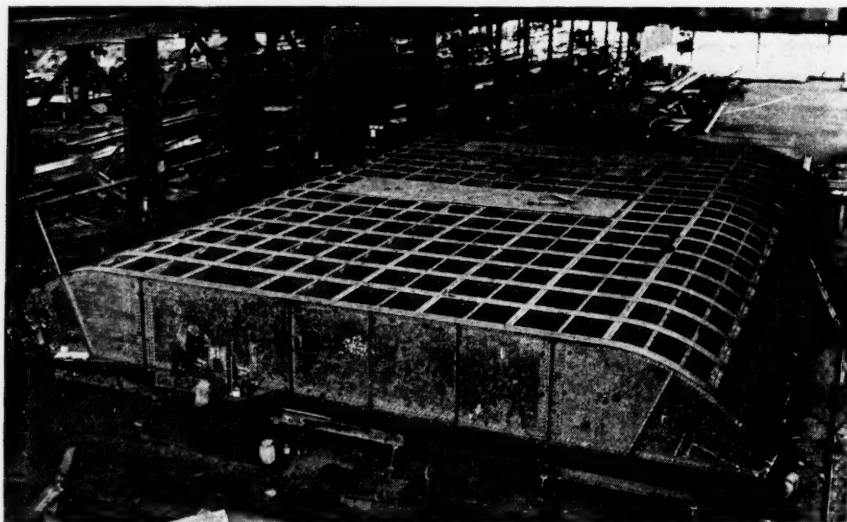
THE Virginia Bridge Company at its Birmingham plant is now constructing the lock gates for the Tennessee Valley Authority's Pickwick Dam project on the Tennessee River, which is said to be the highest single lift of water in the world. The lock is 66 feet high and

One Leaf for Pickwick Dam Lock Gates under construction at Birmingham Plant of Virginia Bridge Co.

37,000,000 gallons of water are required for each lockage.

The steel gates for this lock consist of two upper leaves and two lower leaves. The accompanying illustration shows one leaf of the lower gate as it is being set up and assembled in the Birmingham plant of the Virginia Bridge Company. Each of the two lower gate leaves is 62 feet long, 80 feet high, 7 feet thick, and weighs 518 tons. The upper gate leaves are somewhat similar. Approximately 1500 tons of steel are required in the manufacture of the four gate leaves.

Many similar fabricating jobs have been undertaken at the several Southern plants of the Company in the building of taintor gates for controlling water elevation at dams, sluice gates, intake gates and all kinds of steel work for dams and power projects. One of the recent large contracts filled by the Virginia Bridge Company was 10 taintor gates assembled at its Memphis plant for the Carpenter power dam on the Ouachita River in Arkansas.



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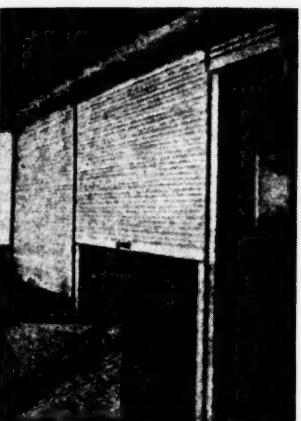
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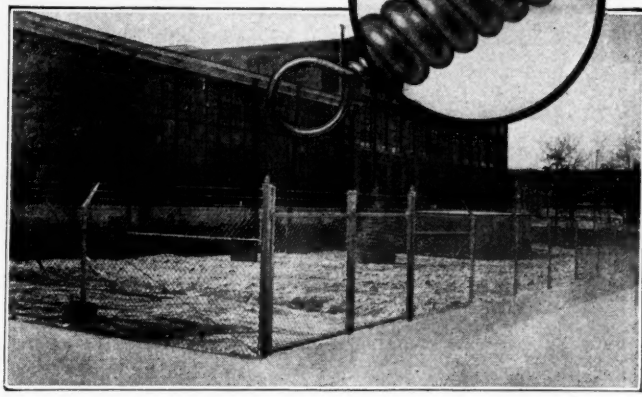
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TRADE LITERATURE

(Continued from page 60)

TUNNEL SHIELD—

Folder No. 1591—illustrating and describing the construction and application of the so-called T & M Tunnel Shield for constructing concrete-lined tunnels of 4- to 8-ft. inside diameter without distributing the surface.

Link-Belt Co., Chicago, Ill.

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Detroit Hume Pipe Company, Detroit, Mich.

PROCESS CYCLE CONTROLLER—

Bulletin No. 447—devoted to Model 608SV Cycle Controller, a new addition to the company's line of controllers.

The Bristol Co., Waterbury, Conn.

COCHRANE ELECTRIC FLOW METERS—

Bulletin 2096—illustrating and describing Cochrane Electric Flow Meters for remote measurement of steam, water, gas and other fluids, describing in detail the highly accurate galvanometer null principle of measurement.

Cochrane Corp., Philadelphia, Pa.

PYROMETRIC HEAT CONTROL—

Bulletins—series of publications on the subject of Pyrometric Heat Control, with detailed analysis of the Wheelco Company's recently developed "Radio Principle" type of Pyrometric Control instruments.

Wheelco Instruments Co., Chicago, Ill.

UNDERFEED STOKERS—

Bulletin—illustrated, devoted to heavy duty underfeed stokers, series 70.

Bulletin—illustrated, devoted to industrial type underfeed stokers, series 60, and the commercial type, series 50.

Flynn & Emrich Co., Baltimore, Md.

BUILDING AIRPORT—

Bulletin—illustrated, devoted to the construction of airports with Le Tourneau equipment.

R. G. Le Tourneau, Inc., Peoria, Ill., and Stockton, Cal., manufacturers of heavy grading equipment.

SILICOSIS PROBLEM—

Booklet—by Dr. M. Kummel, Newark, N. J.,

devoted to the problem of dealing with silicosis and allied dust diseases, reprint from the Medical Record of a resume of the subject.

Medical X-Ray Division, Eastman Kodak Co., Rochester, N. Y.

CLETRAC FACTS—

Booklet—official publication dealing with Cletrac Tractor as an all-season farm machine, illustrated.

The Cleveland Tractor Co., Cleveland, Ohio.

MINERALS YEARBOOK—

Volume—1089 pages, 69 chapters, 154 illustrations, presenting comprehensive and accurate data regarding operation of the mineral industry of the United States in 1935, priced at \$2.00 and may be ordered from Superintendent of Documents, Government Printing Office, Washington, D. C.

United States Bureau of Mines, John W. Finch, Director, Washington.

STRESS OF STEEL RIGID FRAMES—

Booklet—Progress Report No. 2 on Stress Distribution in Steel Rigid Frames, prepared by National Bureau of Standards, United States Department of Commerce, Washington.

American Institute of Steel Construction, New York City.

MATERIALS HANDLING EQUIPMENT—

Folder No. 1569—illustrating and describing new Link-Belt Speed-O-Matic Shovel-Drumline-Crane, emphasizing advantages of the new power control with its short, fast, easy-throw levers.

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Combustion Engineering Co., Inc., New York City.

EXPLOSIVES IN EROSION CONTROL—

Booklet—describing new practices for uses of explosives in erosion control, developed by agricultural engineers, entitled "Blasting Gulley Banks with Explosives."

E. I. du Pont de Nemours & Co., Agricultural Extension Section, Wilmington, Del.

HIGH VOLATILE COALS—

Folder—entitled "Over 40 Million Tons . . ." listing producing companies which

mine the high volatile coals distributed by—Appalachian Coals, Inc., Cincinnati, Ohio.

MANGANESE STEEL—

Folder—entitled "Story of Manganese Steel," covering its properties, methods of manufacture, uses, etc.

American Manganese Steel Co., Chicago Heights, Ill.

FANS AND BLOWERS—

Catalog FB-45—illustrating and describing ILG Propeller Fans and Blowers for ventilation and air conditioning.

ILG Electric Ventilating Co., Chicago, Ill.

DIESEL POWER UNIT—

Pamphlet—illustrating and describing new International PD-80, 6-cylinder Diesel power unit.

International Harvester Company, Chicago, Ill.

ASBESTOS AND MAGNESIA PRODUCTS—

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Keasbey & Mattison Company, Ambler, Pa.

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Angle Steel Stool Co., Plainwell, Mich.

FARM WIRING—

Booklet—28 pages, entitled "The Farm Wiring Problem," based on a speech by H. G. Knoderer, commercial engineer of General Electric Company before recent 30th annual meeting of the American Society of Agricultural Engineers, available from G-E Appliance and Merchandise Department, Bridgeport, Conn.

General Electric Co., Schenectady, N. Y.

GRADE AND HAUL INFORMATION—

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(Continued on page 70)

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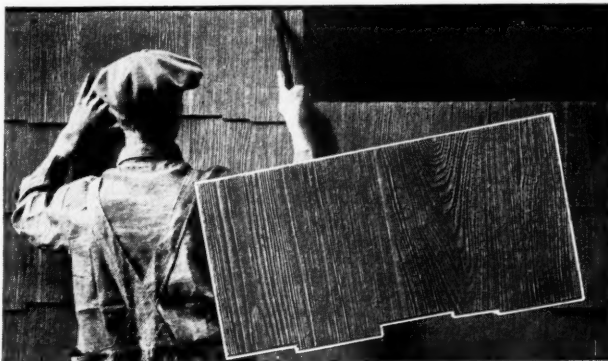
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Northern Hard Rock Maple Flooring

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TRADE LITERATURE

(Continued from page 68)

CHRYSLER CORPORATION NUMBER—
Booklet—attractively bound, reprinted from the Chrysler Corporation number of American Machinist, illustrated, covering management policies, production methods, plant services and associated activities of the Corporation.
Chrysler Corp., Detroit, Mich.

STEAM TURBINES—
Bulletin 1179—illustrated, covering in detail all Allis-Chalmers condensing automatic extraction turbine frames for capacity range of 500 KW through 5,000 KW.
Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

VIBRATING SCREENS—
Catalog No. 1562—24-page, illustrated, devoted to Link-Belt's two types of vibrating screens, "UP" and "PD", for screening coal, clay, coke, sand, gravel, crushed stone, fertilizer, lime, ore, grain, sugar, chemicals, etc.
Link-Belt Company, Chicago, Ill.

POWER BUCKETS—
Bulletin P3-49—covering Williams "Champion" Series Favorite and Hercules power buckets;
Bulletin P3-50—covering Williams "Champion" Cleanup-Rehandler;
Bulletin P3-51—covering Williams Hookon Single Line Bucket;
Bulletin P3-57—covering Williams Multiple-Rope Buckets.
The Wellman Engineering Company, Cleveland, Ohio.

Largest Air Conditioned Storage Room

The California Walnut Growers' Association, Los Angeles, built what is believed to be the largest air conditioned cold storage room in existence, capable of holding 17,000,000 pounds of the well known "Diamond" and "Emerald" brands of walnuts. Temperatures maintained averages between 36 and 40 degrees Fahrenheit, and the relative humidity is kept close to 65 per cent. One of the unique parts of the refrigerating system is the

method of air conditioning developed and patented by the consulting engineer, Paul A. Scherer. Refrigeration is supplied by two 9-inch by 9-inch Frick Ammonia compressors made by the Frick Company, of Waynesboro, Pa., enclosed type, driven through V-belts by Fairbanks-Morse motors.

Lighting to Fit the Job

New possibilities of factory lighting to fit specific needs of the job were disclosed at a recent group meeting of industrial lighting specialists and field representatives of the General Electric Vapor Lamp Company, at Nela Camp, Nela Park, Cleveland, Ohio. President W. A. D. Evans, sounded the theme of the meeting by observing that "Industry is at last becoming light conscious, but that is only the first step in giving to lighting its proper recognition as a production tool. Our next step is to create a consciousness of the need to choose the individual 'lighting tool' best suited to each type of work." Particular emphasis was laid on the increased flexibility, both from the visual and economic viewpoints, which has come about with the development of the new bulb-type mercury lamps, and various color-corrected combinations of mercury-incandescent light sources.

Irvin F. Lehman

Following an illness of several months' duration, Irvin F. Lehman, president, one of the founders of the Blaw-Knox Company, Pittsburgh, Pa., died on August 5 at Hartford, Conn., age 59. He was interested in the development of water-cooled devices for high temperature melting furnaces, a new departure in this type of equipment, and organized the Knox Pressed and Welded Steel Company which operated successfully until 1917 when it was merged with Blaw-Knox Steel Construction Company, under the present name of Blaw-Knox Company. Mr. Lehman served as vice president for many years and was elected president two years ago.

Exponent of America

Thomasville, Ga.

Editor, MANUFACTURERS RECORD:

I thank you for July issue of the MANUFACTURERS RECORD. "Taxation Without Representation" should be made into a reprint of some million copies and placed in the hands of all voters in the coming election.

"Independence" produces thoughts that become every fair person. "Why the South?" asks a question and gives a very concrete answer. "Our American Plan" is a masterpiece and let anyone try to refute the last paragraph and they will have a real job. I, for one, won't junk it. Cottonseed "Farm Cinderella"—too much praise can't be given this item, so I suggest to the press—daily, weekly, and all to copy them for true enlightenment to help the common folks.

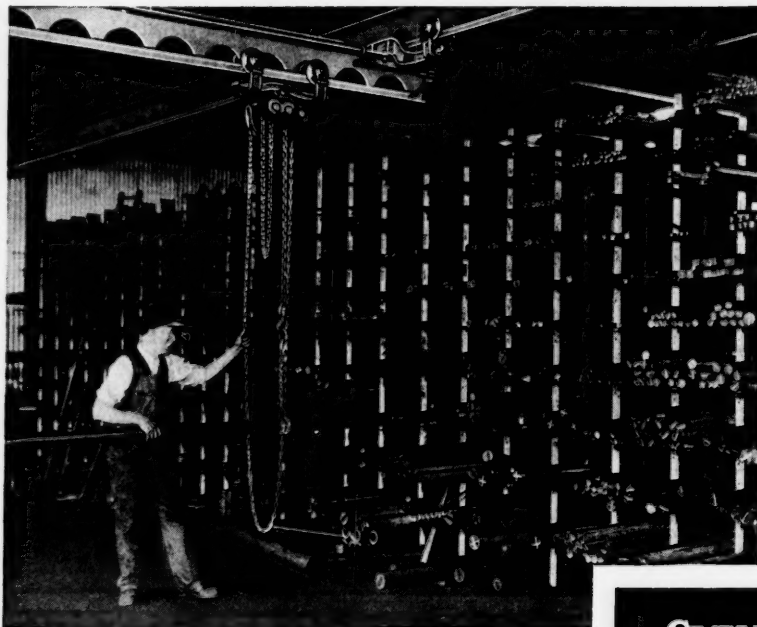
M. Whit Smith.

Retail Store Modernization

An analysis of the physical condition of about 8,000 small and medium-sized stores and service establishments in 23 cities of the United States reveals that over half are in need of modernization in varying degrees, according to Store Modernization Needs, a study made by the Bureau of Foreign and Domestic Commerce.

The most frequent recommendations call for the painting and refinishing of store exteriors and the installing of new or the replacing of existing outside signs. Painting or repairing of walls and ceilings and the improvement of store lighting are recorded as the greatest interior needs.

OVERHEAD MATERIALS HANDLING IS SAFE



LIFT WITH SAFETY

● As we approach National Safety week it is reasonable to believe that you, Mr. Manufacturer and Merchant are interested in Safety from every angle and that you welcome ideas and suggestions which will help you further this commendable effort.

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DIVISION OF
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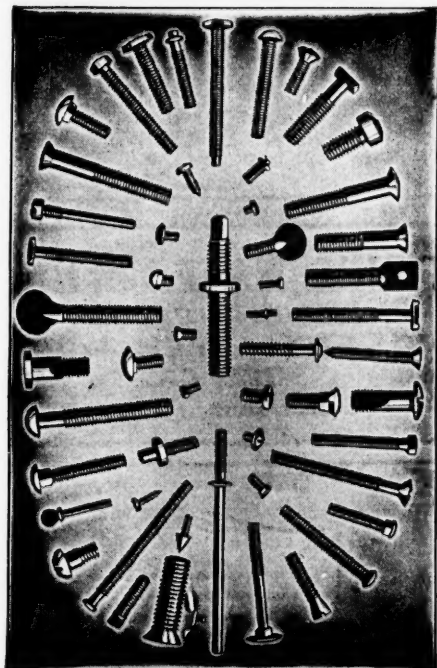
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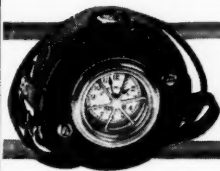
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MR-9

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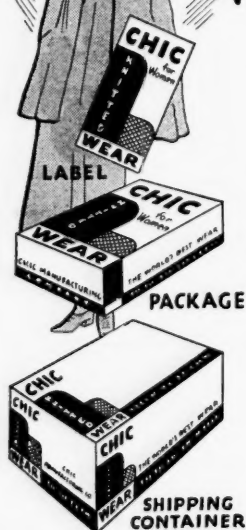
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300 H.P., 3p., 60c., 440v., 690 RPM motor.
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Behind the Scenes of Business—Under the foregoing title a 200-page volume (revised edition) by Roy A. Foulke, Manager, Analytical Report Department, Dunn & Bradstreet, Inc., New York, has been issued by that company. The study was first published in 1935 to give business men some background of basic facts, interpretations, and reasoning not heretofore so readily available regarding the everyday operations of business. In the revised edition all tables have been brought up to date and the appendix has been enlarged.

The House of Goodyear—Prepared by Hugh Allen, of Akron, Ohio, a 413-page volume under the foregoing title presents a history of The Goodyear Tire and Rubber Co., Akron. In his introduction, Mr. Allen observes that every business house writes its autobiography once a year in its annual statement to stockholders, and that a survey of statements through the years presents a graphic picture of the company's changing fortunes, but that such a history misses certain essential factors—such as the clash of personalities, the battle for materials and markets, the long struggle which determines sales and production totals. It takes no account of industrial and social environment in which the company has struggled for survival—and "which it would to some degree affect." Reviewing the early days of the Goodyear Company, Mr. Allen deals with the men responsible for the organization and its development, writing interestingly of various phases of the company's growth.

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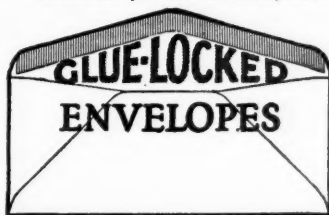
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Iron, Steel and Metal Market

(Continued from page 46)

tract for a \$1,000,000 four-stand tandem tin plate mill to be designed and built by the United Engineering & Foundry Co.

The American Rolling Mill Co., Middletown, O., completed negotiations involving \$8,000,000 for the complete control of the Hamilton Coke and Iron Company. The Koppers Gas and Coke Company received \$4,000,000 for its holdings. Heretofore, the Hamilton Company has been jointly owned and operated by Armco and the Koppers organization, supplying molten pig iron to Armco plants. The blast furnace is being completely rebuilt and enlarged, and will again be in blast early in September. Complete acquisition of this important operation in steel manufacture should effect a considerable reduction in Armco's operating costs.

Copper, Lead and Zinc Demand Better

The tonnage of brass pipe and copper tubing has shown an increase of more than 20 per cent in the past seven months, the total for the year is expected to exceed 90,000,000 pounds, establishing a new record for the use of these materials. Domestic copper sales gained 113 per cent over 1935, increasing from 235,000 tons in the first seven months of 1935 to 500,000 tons to August 1. Exports of copper are the highest since 1931. Lead and zinc sales have improved with shipments better than sales, and tin consumption has increased 35 per cent in the first half of this year.

Potential Water Power in the South

Of the Country's 42,753,000 Horsepower, Approximately 16 Per Cent Is In The Southern States

ESTIMATES of the potential water power in the United States by the Geological Survey, indicate a total of 42,753,000 horsepower is available 90 per cent of the time, or 51,184,000 horsepower 50 per cent of the time. Probably with complete developments of the water power of the whole country, the installed capacity of water wheels and turbines would amount to 80,000,000 horsepower or more. Constructed storage reservoirs have been considered in making the estimates of power available under existing flow, but no allowance has been made for possible future storage.

In the South are estimated more than 6,738,000 horsepower in potential water power available 90 per cent of the time, or 9,457,000 horsepower available 50 per cent of the time.

Developed water power in the South amounts to approximately 4,900,000 horsepower as compared with 16,067,000 horsepower for the United States.

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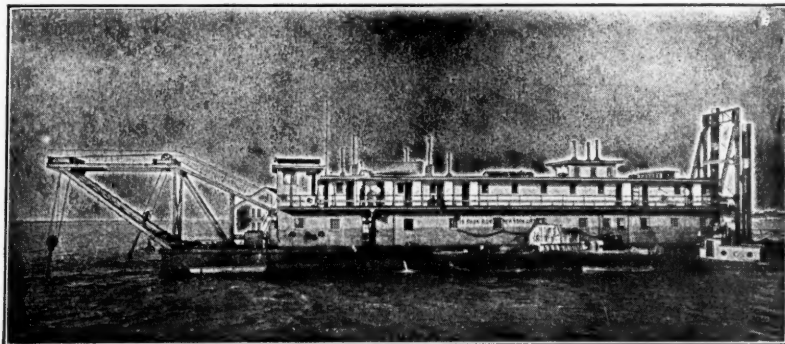
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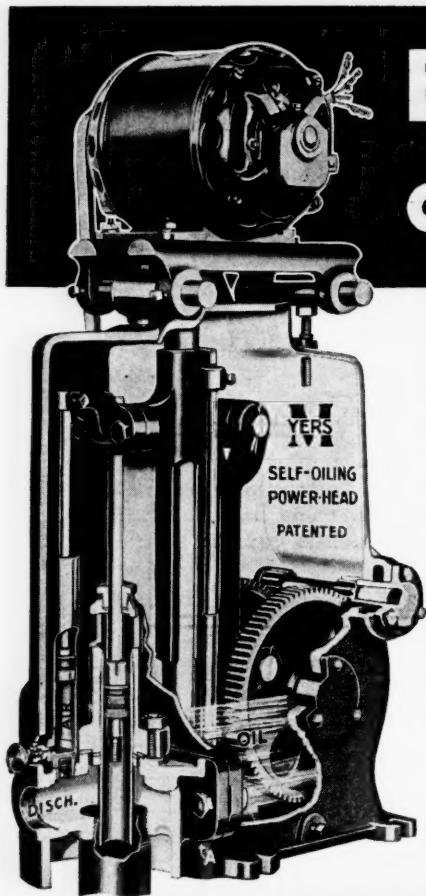
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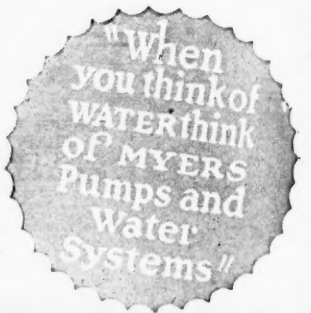
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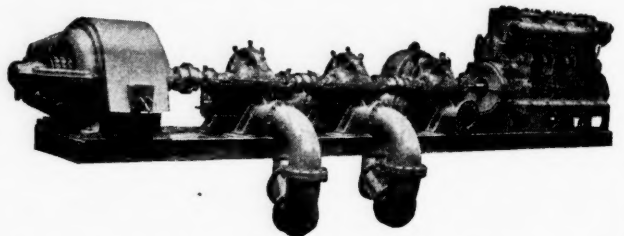
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